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## Datapoint to buy TRW network

BY 1983 distributed processing systems manufacturer Datapoint will directly own and control a substantial marketing force in Europe. The company has agreed in principle with TRW, its master distributor outside the US, to buy TRW's network of ten country distributors, seven of which are in Europe.

In addition, Datapoint expects to complete its acquisition of a number of other companies in the marketing and support operations in Europe. The TRW master distributorship, which the Anglo-American giant acquired in 1970 when Datapoint was a much smaller company, expires in 1983 and the deal transferring control to Datapoint is expected to be completed by July 1981.

## 'US and Japanese must bring R&D as well as production into Europe'

A CALL for EEC countries to agree on a policy that will save Europe from becoming a low skill manufacturing area for high technology US and Japanese firms has been made in a study document prepared by a committee of Strasbourg MPs on the social and industrial impact of microelectronics.

The committee was set up by the European Democratic Group which is made up of Conservative MPs from the UK and Denmark and is chaired by Sir Jack Stewart-Clark, EEC Member for Sussex East and former managing director of Tyne Cambrige, the Philips subsidiary.

Sir Jack told Computer Weekly: "The Japanese and Americans must bring research and development work into the EEC as well as production, and the Community should present a common front in demanding this. Otherwise the non-EEC firm will go to the weakest EEC country that needs a factory simply to provide jobs."

The study urges public bodies in Europe like PTIs to co-operate in developing EEC-wide standards in areas like digital telephone exchanges, electronic mail and videodata systems so that the fragmented European telecommunication would be in a stronger position to compete with outsiders.

Sir Jack pointed out that the

## 'Law cannot deal with computer fraud'—police

THE law and rules of evidence are not always capable of dealing with computer fraud, according to Inspector Norman Colborne of the Greater Manchester Police.

Addressing delegates at the National Computing Centre's conference on computer crime, he cited the Bank of England case where the judge felt unable to admit a computer printout as evidence.

Frank Hooper, president-elect of the British Computer Society, said DP managers would have to pay far more attention to the security of their systems.

He told the delegates they were unlikely to get security from "packages dreamt up by someone for somebody else's application," or what was intended as a panacea for 20,000 other business applications.

Hooper accused analysts and programmers of exercises in technical self-indulgence, and said they designed systems as an outlet for their creative impulses.

"I see no room for creativity in DP. The work must be done according to specific rules and specific standards. There is no room for artists when you need artisans, no room for virtuosos when you need players," he said.

## Low-cost SID to be sold by Swift

SMALL banks can now gain access to the Swift interbank funds transfer network using the ST100, a terminal system costing little more than \$14,000. The ST100 will be built by Texas Instruments and, unlike the existing Swift Interface Devices, which cost up to \$100,000, it will be sold by Swift itself.

The ST100 was announced in Copenhagen last week at the third Swift International Banking Operations Seminar, Sibos 80, which was attended by about 1,000 banking experts from all over the

world, including 140 from the US and 120 from the UK.

Swift has estimated that there are 450 potential users of the ST100 and 200 machines have already been ordered by Swift from Texas in the US. Each will come with a 64K-byte DS990 Model 2 processor, which is based on the 16-bit TMS 9900 chips, two 1.2 megabyte floppy disc drives, a 75 cps bi-directional printer and one VDU.

Software will consist of Texas Instruments operating systems and applications programs being developed by Swift itself in Pascal on a

DS990 Model 4 development system with 256K bytes. The Model 2 cannot hold the Pascal compiler.

The ST100 will provide the same basic data entry and verification facilities as a SID, but without the throughput offered by multiple VDUs. The two main SID suppliers have been Burroughs and General Automation.

In operation an ST100 will be linked to one of the Swift switching centres via a high speed data concentrator. It is designed to handle up to 1,000 messages a day.

## New UK Cobol for US Govt

THE United States Library of Congress has bought a British product, the Alpha Cobol compiler, after hearing of it through a newsletter in the US.

"They just rang us up and ordered it," said Alpha Cobol's author, Tony Sale.

Alpha Cobol was released in July by Computer Applications Research, which claims it as the first micro Cobol "compiler compiler". The system accepts Cobol Meta language in machine readable form and the compiler produces code for a pseudo machine, which is then interpreted at run time.

At present it runs on the Alpha Microsystem (on which it is said to compile at 400 lines per minute).

The Alpha Microsystem is based on an enhanced version of the Western Digital LSI-11 chip set.

The product was developed commercially in competition with the other versions of Cobol for micros that are currently available: Zilog's for Z80s, MicroSoft's Cobol 80, and the two British contenders, MicroFocus's CIS Cobol and CAP-CPP's MicroCobol.

Sale thinks that Alpha Cobol has the advantage over MicroCobol of being 1974 ANSI standard, and against the standard CIS Cobol has the further perk of being a multi-user system.

## Training body

FOLLOWING talks between the Manpower Services Commission and the Computing Services Association, it is likely that any industry training body will be a voluntary council rather than a statutory training board. The latter would involve service companies and DP departments paying compulsory levies to the board.

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## NEWS IN BRIEF

### Takeover at the top

CHAIRMAN and chief executive of Burroughs, Michael Blumenthal, is taking over the latter post three months early. The present incumbent, Paul Minibito, who was to have kept both posts until the end of the year will retain only the chairmanship.

Former US Treasury Secretary Blumenthal has been doing a detailed examination of the company's management structure, and substantial changes are expected to follow his elevation, with more decentralisation.

Burroughs reported its first year-on-year profit decline for 17 years in the April-June quarter.

### French buy

FIRST sale of the Micro Focus CIS Cobol compiler to run on a minicomputer has been made to EMC France. The data entry and business systems specialist, owned by Rediffusion of the UK, wants it to run on the CMC 7600 data entry and local processing system, which is built around the Digital Equipment PDP-11/4.

## Briefing

### Cray chief steps down

SEYMOUR Cray, founder of Cray Research, is stepping down as chief executive of his firm to devote more time to research. He will be succeeded by John Rollwagen, the company's existing president. Cray will remain chairman of the Cray Research board and of the company's executive committee.

In another move, Cray Research is increasing its authorised shares from 10 million to 30 million with the aim of stabilising the public market for them. At the present time they are moving roughly between \$80 and \$90 in value while in future they should trade at between \$25 and \$30.

### Net standards bid

XEROX, Digital Equipment and Intel have completed their specification for local area networking based on Xerox's Ethernet, and are to put up proposals for an international local area networking standard to the US IEEE this month (CW, September 25). Ethernet is the highway for the Xerox integrated office products and is to be launched in Europe shortly.

### 32-bit Level 6?

AS well as following Texas Instruments, Data General and Philips by putting its Level 6 minicomputer onto a chip (CW, June 26) Honeywell is reported to be working on a 32-bit version. Other new models and new software are also expected in a major facelift for the line due shortly.

### Test marketing

NIXDORF has begun test marketing its IBM-compatible 8890 processor, built under licence from Elbit of Israel. In the US, two models, competing with the 4331-1 and 4331-2 are offered there and the company says it will manufacture the 8890 in the US as well as in West Germany when volumes justify it.

CHARLES SCATCHARD, organiser of Honeywell's new evening course "Computers and Logic Application for Secondary Schools" known as CLASP, demonstrated use of the VDU to a London sixth-former. CLASP has been heavily over-subscribed despite doubling the original

number of 20 students, and there is now a further waiting list of 40. The project is part of Honeywell's effort to take part in local West London efforts, and all instructors are giving their time completely voluntarily. Report — Page 3.

## SESA teams up with Honeywell in US

FOLLOWING the formation of a joint company with CII-Honeywell Bull in France last year to bid for a complex computer system contracts, SESA has now teamed up with Honeywell in the US — but the two partnerships are purely coincidental.

"Honeywell and SESA Inc each identified the other as an appropriate partner, and each contacted the other separately during the summer," a Honeywell spokeswoman in Minneapolis told Computer Weekly.

SESA was the prime contractor for both the French Transpac and the European Euronet packet networks and is now marketing packet-switching technology in the US under the name DPS 25. Where minicomputers are required in contracts, Honeywell's Level 6 will be used, and Honeywell's own networking architecture DSA is due for US launch.

The French venture with CII-HB has still to land its first contract, although it is working on several, but two substantial contracts have been won by SESA-Honeywell Communications Inc already. One involves a major New York bank and the other an international record carrier. The principal US record carriers are RCA, ITT and WUI.

SESA has 51% of SESA-Honeywell Communications, and Honeywell the rest.

SESA formed its UK subsidiary on April 1, and is concentrating primarily on packet-switching applications and those which require the continuous operation provided by Tandem's NonStop 16 computers, which have already brought SESA's Deutschland big business.

### 3380 challenge

MEMOREX has confirmed its intention of developing high capacity disc storage products to compete with the IBM 3380 disc drive and the 3380 Model 12 and Model 3 controllers.

# Telecom trials start for PSS

BRITISH Telecom's Packet Switched Service has gone pre-operational — which means it is now available free of charge between London, Reading and Bristol. The plan is to build up gradually to a nine-node service with a total of 400 ports by "early next year".

A spokesman characterised PSS as offering "a whole new range of marketing possibilities which it is up to the industry to supply." He added that British Telecom is considering licensing a private company to offer a mailbox service on it.

The Data Mail mailbox service started last month by Service 800 is not covered by the monopoly because it is based in Switzerland and accessed via the public telephone network. PSS itself was originally due to start in March.

Other "value added" services which will be permitted on PSS include electronic funds transfer, online credit verification and information retrieval.

Bristol Telecom is "not convinced there is a huge army of personal computer users that will want to connect to the service", although its philosophy is that it does not want to impede progress in the computing field.

However, the two US packet network-based information services for personal computer users, Compuserve and the Source, are being mass-marketed and each has as many users as Prestel (over 5,000).

By far the cheapest way to access the new network is via an acoustic coupler and British Telecom has approved their use with personal computers since the beginning of the year. They are also permitted attachments on PSS. The cheapest approved for use on the telephone network is believed to be the £160 300bps Minimodem from Modular Technology of Watford, Herts.

Should computer-based services be hooked up so far, mostly for research work, on packet switching, but 137 have asked for connections within the trial service period, 117 of them for X25 packet transmission and 20 for character terminal connections.

First connections include ICL at Letchworth, South West Universities Regional Computer Centre at Bristol and Hatfield Polytechnic. In a three-hour test last week ICL

### Charges

Other charges associated with the use of PSS from character terminals will be £25 for a network user identity number, £5 a quarter standing charge, 65p an hour for connection to a packet switching exchange via a packet assembler/disassembler, 3p for each 64K bytes transmitted and the phone call to the nearest packet switching exchange.

Only a handful of organisations are hooked up so far, mostly for research work, on packet switching, but 137 have asked for connections within the trial service period, 117 of them for X25 packet transmission and 20 for character terminal connections.

First connections include ICL at Letchworth, South West Universities Regional Computer Centre at Bristol and Hatfield Polytechnic. In a three-hour test last week ICL

● Turn to page 3

## Royal start to IFIP 80

PROFESSOR Frank Sumner of Manchester University and Crown Prince Akihito of Japan both took the rostrum at the opening ceremony for the Eighth World Computer Congress, IFIP 80, this week, writes Keith Jones in Tokyo.

Prince Akihito talked of the world entering the Information-oriented era, and said that the Congress in Tokyo and Melbourne — next week's venue — would give great stimulation to those concerned with computer science and information processing in both host countries and in the neighbouring areas.

## VSPC change

THE IBM Virtual Storage Personal Computing system, VSPC, is to become an MVS-only product. The DOS and OS/VS1 versions are to be dropped. This became clear at a meeting in Norway last week of the Shared European Association, SEAS, IBM user group.

The aim is to make VSPC two to four times better in price-performance terms than TSO, with CPU costs equal to those of VM/CMS, and it is thought that only by concentrating on the MVS version can more powerful facilities be developed.

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## Govt urged to promote computers in business

THE government must make much greater efforts to promote the use of computers in business, public administration and information services if the UK economy is not to lose out seriously to foreign competition. That is the main theme of the latest report from the Advisory Council for Applied Research and Development, entitled Information Technology: that responsibility for information technology should be brought together in one place in the government has already resulted in the reorganisation of the Department of Industry (CW, September 25).

A further step has been taken by the Cabinet Office which has set up a senior committee under the chairmanship of Roy Croft, a deputy secretary, to co-ordinate responsibility across the government for information technology. The committee is starting work this week.

Sir Robert Clayton of GEC, chairman of the working group which produced the report, compared the UK government unfavourably with the French administration, which had been vigorously

promoting the significance of computing to the public with an "awareness" week, plans for on-line telephone directories, and funding for micros in schools. Here, Clayton said, there had been far too much attention placed by ministers on "the chip", and not enough on practical applications.

Steve Shirley of F International, another member of the working group, said they were concerned not about new technology but about that which is available now but is not being used because of complacent attitudes.

The report recommends that British Telecom should have "a mandate to provide a world-class competitive UK communications network", and should not be prevented from getting private finance for this. Competition should be allowed to the provision of terminal equipment and British Telecom should not be the approving authority for kit supplied by others.

No further government-funded R&D is advocated; rather existing work needs to be brought together, the report says.

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## INSIDE THIS WEEK'S CW

<b>JAMBOREE</b> DP's triennial jamboree IFIP, the International Federation of Information Processing Societies, opened this week in Tokyo — report on back page 5 and switches next week to Melbourne. Preview and background — page 15.	<b>Keyboard for OOF</b> Programmers page 8 Software File 7 Op Spot 8 People/Events/LiveWare 10 Q1 plasma display 11 CBA training plans 12 Chips expanded in NY banks 13 Company News 14 Data survey: main results 16 Data survey: part 2 17 Software maintenance 18 Products in the marketplace 19 Contract employment 20 Sales 21 For possession of Ads 22
<b>ALSO...</b> Computervision/Latters 2 Inac alone at Software Int'l 3 Downtime/Gib/Focus/10 Years Ago 4	

**JOB OPPORTUNITIES: PAGES 22-27**



## Downtime

by Chad

### This recession isn't working!

RECESSIONARY THOUGHTS: I cry, trying to ring up a computer company that has just sacked a whole lot of graduates: "Why the blazes don't these people answer the phone?" Wilyly replies my colleague Tim Palmer: "Because they've tried the telephone."

It turned out they had moved offices, and are not really in any danger of going out of business. By the way, you needn't imagine just because there is a recession you will be able to get your hand to your phone or your car fixed any sooner than usual.

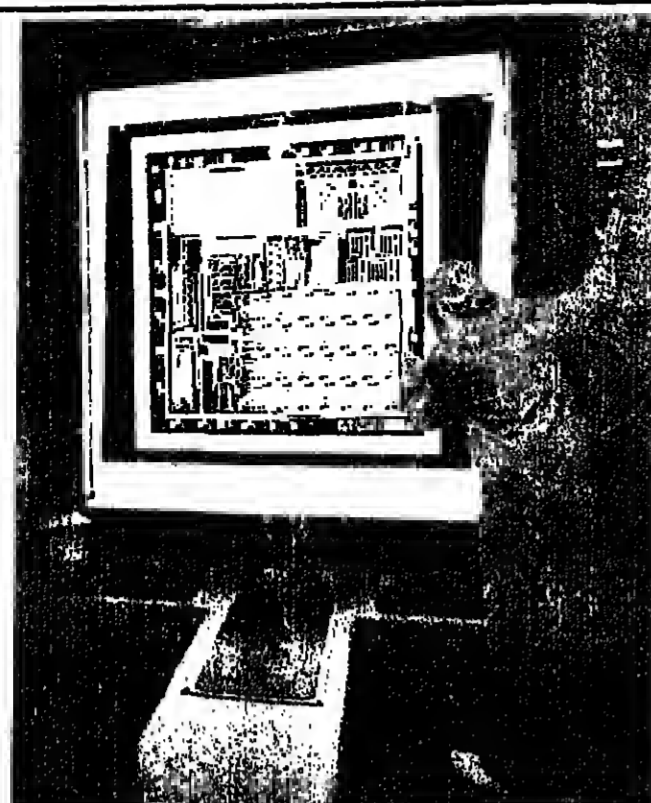
So you're offering them money? You can't expect en-

lightened non-materialistic businessmen to be interested in that!

A friend who is moving house has been told she won't be able to get a phone until late nineteenth-century-five. This is clever.

"The way it works is this: in times of boom, the PO explains, 'There are so many people who want phones we won't be able to get you one for yunks.' Then when there's a recession they say, 'The PSBR has been cut back so we won't have any money to spend on giving you a phone for yunks.'"

Of course they won't cut back on exhorting you to buy a phone.



I suppose it was inevitable that sooner or later Ken Russell would make a film about microchips.

## I-told-you-so department

CHAD is smirking all the way round to the back of his head this week, following last week's Downtime piece about so-called spelling checkers on word processors. Some friends at the Polytechnic of Central London have sent me a letter they have

received from none other than IBM, exhorting them to buy the new Displaywriter WP.

One of the most splendid features of this machine, the letter says, is the wonderful spelling checker. You'd better believe it. The one-and-a-half page letter contains no fewer than five spelling mistakes.

One of these is a valid word which the checker could not possibly find, but the others, as you can see, are words that you

Managment

would find only in a most peculiar dictionary.

For good measure the letter adds our syntax error and one punctuation error, together with an example of one of the most strapping pieces of clumsy construction I have come across in a month of Sundays.

There is of course no automatic checker for these yet, but doubtless someone in Armonk is

heaving away to produce one, so that future letters can have five of each error instead of just one.

## GILB'S MYTHODOLOGY

### Make simplification into a formal goal

IN the data processing business, we are, as an international professional group, terrible at making any clear formal goal statements furany of our projects. So I should really make this suggestion in two steps:

First, have clear measurable goals before undertaking any important system development activity. Then among these clear measurable goals, should be goals which directly encourage simplification.

Let us optimistically presume that you not only are convinced of the need for clear measurable goals, but that you practise it regularly - practise it for all critical goals of the system, such as maintainability, and not just for the easy-to-measure ones, like response time.

We can now approach the additional question of how to encourage our design teams (or programmers functioning as designers) to find simplified approaches to their designs.

The fundamental reason for complex designs is what I call functional design. We are too concerned with the analysis and design activity of making sure that all necessary functions are identified and put into the system. In doing functional analysis and design we usually forget attribute design. "Getting the functions to somehow work, as early as possible" becomes the order of the day.

#### Risk level

Attribute considerations which might lead to several desirable types of simplification, seem to get showed aside in the panic of the complex functional requirements planning concept of evolutionarily delivering the system, and identifying functional needs in detail at a later time is too rarely a conscious process. We seem afraid of doing this, because we lack professional insight into how to control such an evolutionary

#### Guarantee

Or it can be expressed in the form of a "worst-case" specification for each attribute. For example, planned delivery time by Jan 1, worst case by July 1. What happens if I change the worst case to by Jan 15? Obviously I have less freedom to be late. I must find a surer way of delivering the system.

This pressure to plan a low risk system might lead me to consider dealing with an outside supplier who is willing and able to guarantee things. After, even at a higher system cost. The pressure might lead you to consider getting some kind of ready-made system, rather than building the more customised version which management have now told you they are not willing to wait until July to get.

Options such as contracting with a supplier who will guarantee, or getting ready-made systems, are really simplifications. They remove the uncertainty of the less simple process of building it yourself, or letting a supplier loose without accepting a commitment to be finished near a given date.

Applying this principle of attribute specification to a different attribute in a typical data processing system can be illustrated further with User Simplification. Most of us would probably pay lip service to the goal of making things easy for the final user of the system. Yet can you find this laudable goal as a measured attribute in your system?



Tom Gilb is an independent consultant, lecturer and author on computing topics.

any of your systems? Have you ever had to pass an acceptance test where the learning time and productivity of the user had to meet certain levels, not just the "response time of the computer terminal"?

Try the following goal idea prototype out on your own system: No presently employed user shall need more than one day on the job to reach solo capability on the terminal, nor more than three weeks to reach a productivity of 300 transactions per five hours' constant work.

Now to reach goals like this you will have to simplify the system from the point of view of the user. This may complicate the programming and design - but that is our job, so don't try to escape it by putting the burden on the user.

Goals such as the above should lead to simple mnemonic codes, natural procedures, indexes by keyword in the user handbook, online help facilities and other simplifications for the user.

Gilb's hypothesis: If management really want to achieve system simplification, then they must communicate the underlying reason in the form of a clear system attribute specification. Failure to do this will result in overcomplex systems, and this is a management failure.

## TEN YEARS AGO

From Computer Weekly of October 8, 1970.

SIR JOHN WALL, chairman of ICL, signed a £250,000 contract for two System 480 computers to go to the Ministry of Foreign Trade in Moscow. It was the first Western company to gain fully accredited status with the Russian ministry. As a result of what was believed to be the largest single computer contract ever placed in Ireland, the Dublin-based Bank of Ireland acquired 25 million worth of ICL equipment, including two 1804A processors. The computer services network, BSA International, was formed in Paris by Matra International. The 2800C, a time sharing system capable of handling 32 terminals

## FOCUS

### Giving the DPM his due

ASSET-STRIPPING has been a way of business life for some considerable time. It now seems that the noble art of stripping has reached the computing corridors of power.

Increasingly, the vestments being discarded are those of the data processing manager. His responsibilities, power bases, authority and possible prestige are being eroded as quickly as IDPM membership. "Power to the user" is the sales message currently being signalled to the industry. Whoever may have his finger on any future data processing button, the odds are mounting that it won't be the DPM's.

The latest "Let's knock the DPM" campaign is being promoted by the BIS, whose leader Ron Yewley has widely spread the image of the DPM as that of a dinosaur - and a particularly backward member of that species to boot.

#### Cramming

The BIS is now presenting a series of courses on improving essential data processing skills. Rather surprisingly these skills do not cover such basic computing activities as cramming in an extra work shift a week, coping with work-flows when half the operating team is absent, or making do with (or mending) that old disc drive.

In fact, the role of the DPM is being undermined by the BIS which is clearly placing its fee revenues on the computer user. According to the course notes on Practical Project Management, the session is aimed at those controlling or likely to be controlling DP

projects. Apart from this one reference in DP, the reader could assume that the project management in question involved deep sea diving, construction of Middle Eastern oil fields or Chinese take-aways.

#### Quality

Unfortunately, at least for the course presenters and possibly ambitious non-DP management's computing project management's far from being a matter of checklists and objectives. Quality assurance, by tradition, figure highly on most management project courses. The random business leader would find it hard to establish firm quality assurance within the computer operation. The required PO telecom lines will no doubt perform adequately when they are finally delivered. The Andahli mainframe will not let the side down, providing there is no power supply failure. The PDP peripherals will give a keen performance providing the interface procedures are closely controlled. The IBM printer will perform as required, providing the continuous supply of paper does not run out.

Having sorted out quality assurance the user project leader would then have to deal with activity control.

Although technical skills alone do not necessarily promote efficient project control, there is no doubt that they help. The day when the course presenters stage practical project control sessions on bridge building, nuclear power station operations or preventive medicine, all of which are marked as being suitable for the non-technical user, will indeed be notable. In the meantime, DP project control should be left to the computer professionals. Otherwise the project could quickly find itself stranded.



# Keyboard or handprint for office of the future?

IBM experts disagree about the exact form of the office of the future. The marketing staff appear to favour the alphanumeric keyboard as an acceptable device for interacting with the system. But some of the research people believe that managers will not come to terms with the keyboard and will demand some form of electronic handwriting unit.

This information was part of the mass of facts and figures picked up in the US by Roger Darlington, assistant research officer at the Post Office Engineering Union.

He has just returned from more than a month visiting US institutions, mainly in the telecommunications field, under a travelling fellowship awarded by the Winston Churchill Memorial Trust.

#### Traditional

IBM laid on a set of presentations for Darlington personally at its Yorktown Heights offices, including a talk by Evon Greenias, one of IBM's lifetime fellows. Greenias is manager of the advanced office applications sector at the IBM research laboratories at Yorktown Heights and the message he put over in his talk was that the office of the future will have to be as compatible as possible with traditional office procedures.

According to Greenias the new

electronic equipment should have as low a physical profile as possible and should cater for managers who were not interested in acquiring keyboard skills.

Greenias said that a handwriting input system was under development at Yorktown Heights involving an electronic pen and writing tablet.

But Darlington gathered from the Greenias talk that the system was still very much at the conceptual stage.

#### Incredulous

Darlington said that the other IBM people at the presentation reacted to what Greenias had in say with incredulity and views were expressed to the effect that managers would be prepared to live with the keyboard.

IBM marketing people present at the meeting doubted if the system conceived by Greenias could ever be sold successfully.

At the moment there are systems like the Quest Automation Micropad that can recognise individual and carefully formed letters and numbers and some sophisticated OCR systems that can read handprinted alphanumeric characters if they are written with care. But there is no system anywhere near the marketable stage that can read the freehand writing of any individual.

IBM has a system at Yorktown Heights that can recognise contin-

uous speech, but only after it has been extensively "trained" to follow the speech patterns of the individual talking to it (CW, April 17). That system was also discussed in the presentation and IBM made it clear to Darlington that it required a lot of computer power to support.

#### Voicebank

Darlington's tour of the US also took in Voicebank Delta, the tele-

phone answering service owned by Exxon subsidiary Delphi, whose Delta 2 system is to be manufactured in the UK under licence by Nexos.

Darlington visited the first Voicebank centre which is in San Francisco and was told that the second would start operating in Los Angeles in the spring of next year.

The San Francisco centre now handles 24,000 calls a day for 4,000 customers.

## Gallium arsenide nears big-scale production

GALLIUM ARSENIDE technology is on the verge of moving from the laboratory and limited production into large-scale commercial production, and is being used by Fujitsu in the development of a "super computer", according to a study by Strategic Business Services, a market research company of San Jose, California.

Entitled Impact of Gallium Arsenide on MOS, SOS and Bipolar Technologies, the study shows

that the initial penetration of GaAs will be in specialised applications such as high-speed computers, phased array radar and interfaces to fibre optic links.

#### High priced

The report indicates that the first products, expected to appear during the next two to three years, will not be directly competitive with existing products. They are

## Currys plans 20 micro outlets by next March

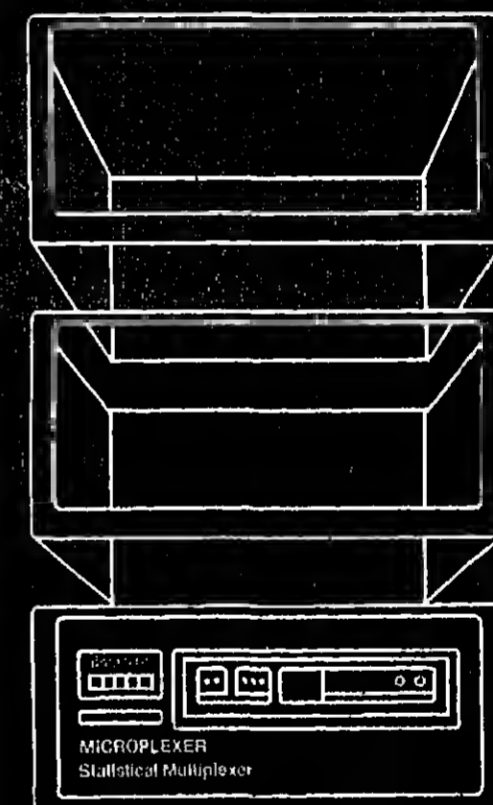
COMPUTER competition in the high street is heating up, with Currys formally announcing its plans last week. The electrical goods chain has opened a microsystems subsidiary trading under the name Micro C. So far, there are seven Micro C outlets in Currys stores, and by the end of March 1981, the company hopes to have 20.

Micro C markets a range of hardware, software and systems equipment covering a price spectrum of £450 to £14,000. Among the microcomputers on sale are the Commodore Pet, ITT 2020, Panasonic JD 800U and the Apple II.

The company sees its market divided into four segments: the hobbyist, the educational market, the first time (small business) user and the larger corporate company.

The main suppliers are Perce and Panasonic, chosen primarily for their ability to support their equipment. Hardware is guaranteed for 12 months by Currys and software is supported indefinitely.

The Currys electrical chain has a reputation as a discount store. However, Micro C's strategy is the personal touch, and it will act as a consultancy as well as a microcomputer retailer.



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by Pamela Rowe

## Best-selling micro manual



Zaks

"We sold out in three or four days. Couldn't get any more for love or money."

"Just let me have the books," pleaded bookseller Vincent B. Owen. "I can sell as many as I can get."

What was this? Fanny Hill or the latest Forsyth? No, a handbook on a micro operating system that in the US is rivaling fiction sales. The author, Rodney Zaks, is well-known both for his previous titles and as the managing director of the Sybex publishing company based in Berkeley, California.

John England of Computer Bookshop attributed the tearaway success of the CP/M Handbook to the fact that it is filling an essential gap in the market. "Quite simply, there wasn't a book that explained the CP/M operating system. Now users can sit down with the book and the machine and work their way through it."

When I spoke to Zaks his reply confirmed the merry-go-round of success. "What I most wish to do now is reduce my workload by 10%-20%. Whether of writing or publishing, I just want to do less."

### Manual

Later he described how the book was written: "At Sybex we view books as part of the general micro field and they are designed, written and marketed much as any other piece of computer software."

"The handbook started as an in-house manual because we needed one. Then we had many letters from customers with the same difficulties, and we designed a pro-

duct to solve the problem. We offered the solution to the market."

John England said he had never known a demand like it, and he currently needed 2,000 more copies.

Zaks acknowledged, "I have a love/hate relationship with this particular book. It is lovely that everyone is shouting for orders but I hate that we printed only 45,000 and they're all sold. In fact they were all sold in the first few weeks."

### No gamble

The point was made that the print run was determined by pre-publication orders, so that Sybex had taken no gamble at all.

"That is true," said Zaks, "and we got it wrong, that's all. I wish we'd printed more." He smiled.

"This is not a common problem in publishing; ordering a greater print run is easy. A more usual problem is that it takes two years to produce a book, and in computing by that time it is out of date. Also traditional publishers do not understand computer technology."

"We try and run the company like an efficient electronics outfit. Each department processes its part of the operation to a strict schedule. I think from inception to mass-production the CP/M Handbook took only one year."

Trevor Brown of Crystal Electronics interposed: "I will be giving away a copy of the handbook with every program I sell. When you think that potentially I supply about 100,000 Sharp users, I expect to move that many books in 18 months."

COMPUTERS are traditionally deamed to threaten the printed word with extinction. But one branch of the industry is flourishing, producing books on computers.

Two authors, both well-known in this field, are Daniel D. McCracken and American Rodney Zaks, who has just produced a best-seller. Dan McCracken is promoting his new book A Guide to Nomad for Applications Development; Nomad is a rival to the conceptually similar package Tymis.

"It's the only way the poor whatsis can get the books," put in Reg Martin, also from Computer Bookshop. "There was one bloke who walked on to our stand at the Euro-micro exhibition and ordered £200 of titles there and then."

What of future titles — were there any plans for any more, blockbusters? Zaks replied:

"We plan to produce a title a month. Some of those soon to be released are two titles on Basic, one teaching Basic through games and the other on exercises concentrated on improving style; and two titles on Pascal."

\*The CP/M Handbook. Rodney Zaks, Sybex. Available in the UK at £8.95.

## Dual attack speeds up development

THE two main problems that beset any normal, harassed DP manager are shortage of trained staff and a backlog of applications work. These two are not unconnected, of course, but somehow despite taking on the odd extra programmer, the department can never seem to catch up with its increasing workload.

Daniel McCracken has suggested an alternative approach to the problem. He advocates speeding up the development time of applications work by using a development package called Nomad.

so that modification of one part does not seriously affect another. By using the block approach a portion of the prototype database can be removed without impacting on the main database, or necessitating a redesign.

"In this way," said McCracken, "the application is developed in a running rather than a developmental environment."

This is in contrast to the usual practice of 18 months' delay between original specification of a system and final presentation to a user. Much can happen in that time, and the user meanwhile has had no experience of or participation in the system.

This also raises more philosophical questions of how the system, once installed, will influence the current environment. How, for example, are the operations staff going to like the changes? Will the system affect the



McCracken

way the department interacts with other parts of the company?

By developing piecemeal, these questions are to a great extent solved en route.

From the point of the end user the rationale behind Nomad is that, as hardware becomes cheaper, and people more expensive, the accent is on saving the user time and therefore money, rather than worrying over machine efficiency. So that manpower problems have a greater emphasis than machine statistics.

\*A guide to Nomad for application development. Daniel McCracken, National CSS, Wilton, Connecticut. \$14.95.

## ... especially for the non-DP professional

DANIEL McCracken feels that a trend away from writing full-scale specifications of a new system and a move towards prototyping will be one of the major spin-off benefits of very high-level user-oriented languages such as Nomad.

Nomad is intended for use primarily by non-DP professionals like accountants and project managers. But McCracken also sees the programming speed that it offers proving useful to DP specialists who want to be able to demonstrate the bare bones of a system to the user department to check that it meets its requirements.

Commitment to the full-scale programming job need only start when the system fits the bill. Programming of the final system could be in Nomad itself or in

some lower-level language like Cobol, depending on factors like the programming resources available and the efficiency required of the system when it is in operation. Key parts of the system could be programmed in assembly language or Cobol, for example, and the rest in Nomad.

At the moment Nomad is available in the UK on a time sharing basis. In the US, it can also be run by the user in-house on an IBM-compatible minicomputer, the V32, supplied by National CSS. According to McCracken, the V32 needs at least a megabyte to run it.

In the US, Nomad has been adopted by about 2,000 organisations since 1975 and in the UK it now provides more than half the business of CSS International.

## Competitor for Nomad

TYMIS, manufactured outside the UK as Focus, is a database management system marketed and supported in Britain by Tymshare of London. Like its rival Nomad, it is designed both for the novice user and for experienced programmers.

### Structures

Mark Boyles, technical service manager of Tymshare, spoke of the possible data structures. "The database can be organised in many ways: single relations, multi-path hierarchies, or shared hierarchical networks. One common application is in local authority work where the data is grouped into hierarchical levels, which can be accessed at any level and worked up or down."

He went on to describe some of the other facilities offered by Tymis. Scan is an interactive editor which allows a browse through the database adding or amending as you go, while the Modify command is used for more systematic updates.

When you know the questions you want to ask but are not sure where they will lead, the Query Language will retrieve records, perform calculations, sort the output, and finally arrange the format of the report. A Graph facility interprets the data as histogram, bar chart, scatter diagram or connected plot.

Existing in-house systems can interface with Tymis via the Host Language Interface. Any language that allows call of a subroutine can interface, including Cobol, Fortran, PL/I and Assembler. Tymis is available on the Tym coin-370.

**Puzzler**  
It has been discovered that there are only two whole numbers containing no zeros which exactly equal 1,000,000,000 when multiplied together. Can you find them before turning to page 37 for the solution?

## SOFTWARE FILE

One of the big problems for those trying to market software imaginatively is that it's invisible. This week Software File takes a look at the world's first show devoted to software packages, held in Chicago, and tries to answer everybody's first question: "Just how do you put software on show?"

The event was the brain-child of Ken

Burroughs, who organised the conference program to run concurrently with an "exposition" of products at the Hyatt Regency Hotel. Software Info was backed by the Chicago-based magazine Infosystems, whose publisher was convinced, by the volume of software inquiries he received, that the industry was badly in need of such a show.

## So how do you show software?

CHICAGO, one of the main convention centres in the US, hosted the world's first show devoted to computer software.

The whole idea of showing software rather than the hardware it runs on, has raised some eyebrows. A few companies missed out on the show — the most significant absentee being IBM — but other hardware vendors such as Burroughs were there, and the software exhibitors revelled in being the centre of attention for once.

Most of the big names were in evidence — Cullinane, Pansophic, Computer Associates, Boole and Babbage, Applied Data Research. Most had gone for a low-key approach, although booths were

colourful and in most cases a lot of thought had gone into presentation.

Some relied on a display of brochures and plenty of advisers on the stand to answer inquiries. Others gave video shows explaining their products, and a large percentage had terminals on the stand to demonstrate online products.

There were a few gimmicks about. Software AG had a miniature putting course, Allen Services had a magic show, and one stall was giving away popcorn. But there was very little razzamatazz.

The aisles were full but not crowded, and the atmosphere was studios, more like an art gallery than a fairground. In fact, one of

the things that pleased exhibitors was that every visitor was a potential buyer.

The reaction from the buyers seemed to be enthusiastic. Many came along looking in specific areas, such as financial packages or databases, and found it helpful to have all the options gathered under one roof.

"It's good to have functional booths where you can really get a good idea of what's on offer," said one visitor. And added, like everyone else: "I'm definitely coming back next year."



Visitors view the wares on show at the world's first exhibition of packaged software in Chicago. On the right is Infosys.

## European event planned

ENCOURAGED by the response to Software Info, plans for a similar event for Europe are becoming firmer, with many US exhibitors already interested. It will probably take place in spring 1981, in Paris, following the same pattern of conference combined with exhibition.

## Exhibitors approve of show for buyers only

THE "exposition" part of Software Info lasted three days, starting a day before the conference part and finishing a day earlier.

There were over 90 exhibitors, and most of the large software organisations (and many small ones) took part. One of the few absences, Cincom, had already accepted a prior engagement, as turned out to be the case with some other names one might have expected to see.

Although there were over 4,500 pre-registered applications to attend the show, many more people turned up at the last minute, swelling the numbers to over 5,000. While the aisles were far from full on the first and last days of the show, the middle day, Tuesday, saw an enormous crowd, with staff on the stands permanently occupied with queries and demonstrations.

A canvass of opinions among exhibitors on the last day revealed strong approval of the idea of a software show, and a universally high opinion of the kind of person who visited. Many commented that they would prefer it to stay that way — limited to genuine buyers who already knew their area of interest, and closed to students and "coasters" who come

### Wide range

The impression gained from a poll taken on the show's heaviest day, Tuesday, was that the visitors knew exactly what they wanted. They appeared to welcome the opportunity the show provided to see a spread of products under one roof, from a wide range of companies.

"Far more worthwhile than spending a morning on the phone," commented one buyer. Suggestions from others were that stands should be grouped according to products, so that financial planning packages, performance measurement or report generators could all be found in the same patch.

## Custom-building too dear

THE conference on packaged software which ran alongside the exhibition reflected the main concerns of both buyers and vendors. Speakers dealt with such subjects as productivity, market trends, and selection criteria.

Other presentations covered systems management aids, legal and financial aspects of buying and selling software, and a wide range of application studies.

Senior executives from the banking, insurance and manufac-

turing sectors discussed their experiences with software. They covered trends in the software industry as well as in their own companies.

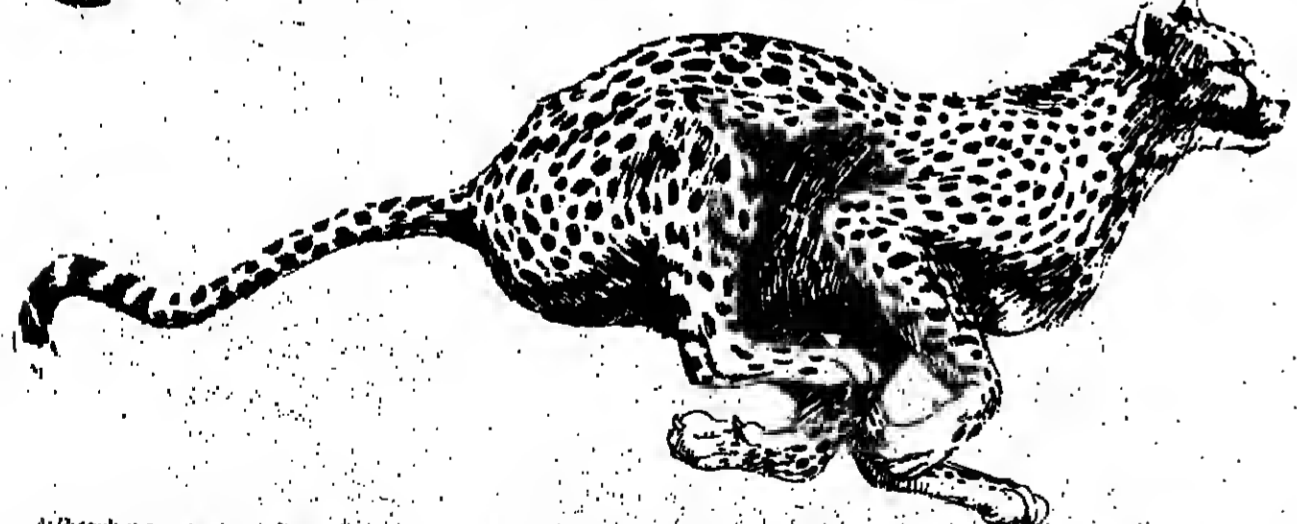
From their experiences selecting, installing and using software, the common theme of the conference emerged clearly. Basically firms can no longer afford the luxury of software which is custom-built, tailored, or written in-house, and are increasingly turning to packaged solutions.

## Early booking for next year

PLANS are already under way for next year's Software Info, again to be held in Chicago in mid-September. "Many people held back this year from sheer caution because it was a first-time show," said Bob Dimond, publisher of the show's sponsor, Infosystems magazine. "And many more were already committed to other ventures."

Next year's show already has a steering committee of vendors, who are putting into action ideas and improvements gleaned from this year's experience. There may well be a limit on the hardware allowed on a stand, and whereas this year's entrance was free, the panel will be discussing ways of maintaining attendance on the basis of "quality not quantity," which might include fees.

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## OP SPOT

by Paul Fisher

## A job that's as safe as houses...

BUILDING societies are as safe as houses. The people who work in them are probably drawn to their jobs by an instinct for security — an instinct which will have been sharpened since "recession" came on to everyone's lips.

"Security" — that's what a lot of people are looking for these days, isn't it? says Mike Jackson. He is in charge of operations support at the Abbey National Building Society's North London installation.

He has been with the company for nine years having started as an accountant.

## Stability

Heading computer operations is Alan Chappell, who has also spent most of his career within the company. A fellow of the Building Society's Institute, he is very much a company man who likes to emphasise that he and his staff work for a building society rather than a computer installation.

He says data processing departments often forget that they exist to serve a user and he points out that that the users sometimes regard the computer as a parasite.

His organisation would prefer to use clerks with pencils and paper if

it was cheaper, he adds. The stability of the operations department at Abbey National can be judged by the fact that a team of 24 operators has remained more or less intact for the past year. They are generally better paid than their counterparts in the branch offices and receive assistance on their mortgages.

"You must be honest," says Chappell, "when recruiting new members of staff." He has interviewed several people who have left their previous jobs due to unfulfilled promises. Although he sees the proliferation of new systems as providing fresh career opportunities in ops, he knows that at his site the promotion pyramid narrows rather quickly at the top.

However, Abbey National likes to hang on to its staff. "If I have to lose a talented member of staff at some time in the future," says Chappell, "I would rather he or she was lost to another area within the organisation than lost to the organisation altogether."

Selection of operators follows

four stages. A written aptitude test is taken after an initial interview with the personnel department. The third, and most important, stage is a walk around the computer room when the applicant's knowledge is pinned down. Fourthly comes the main interview.

## Choosy

Times are getting harder, even for those who want to work with computers. When Chappell recruits, especially for trainees, he does so from a buyer's market and can afford to be choosy. He never uses contract staff.

The latest economic climate has certainly not inhibited the growth of Abbey National's fortunes. During the first six months of 1980 its assets have grown by £576 million to £7,826 million. This wealth is monitored by a Univac 1100/82 which is at the centre of a telecommunications network with links to over 600 branch offices. It handles well over a quarter of a million transactions and inquiries every day.

The present 1-megaword 1100/82 was recently upgraded from an 1100/81. Peripherals include four 8405 discs, 16 removable disc pack drives, four printers, a card reader and two consoles.

"We are exceedingly tape oriented," says Mike Jackson. That is borne out by the nearly 6,000 tapes on site holding information on the range of Abbey National's activities.

At Easter the site switched from



## Svengalis or Shylocks of DP?

"What are the contract operators?" asks Bob Butler. "Are they the Svengalis, Shylocks and cowboys of the DP world, or could they be dedicated professionals?"

Butler should know the answers. He is a contract worker from the West Midlands who seems to have few delusions concerning the temporary role he takes up.

For a start he recognises that "the client is paying out a high amount of money on a service he is desperate for. He expects the best and that is what he should receive."

"Any fool can give himself a bad name," he says, "but a good reputation has to be earned, especially now contracts are becoming harder to find."

## Late

"Time and again," says Butler, "we get contractors acting as though they are God's gift to DP. It's not unusual for them to be late, after all they only have to answer to themselves."

"Even if you think they're all a load of twits," he says, "the best thing you can do is to keep that to yourself."

Diplomatic to the last, Butler points out that contractors who have a cross to bear, "Why not put the permanent staff straight by telling them the facts? There is no holiday pay for contractors, no sick pay and no taking the odd day off. And worst of all, there is no waiting for the next assignment."



## Write to us

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## MICRO NEWS

by Eileen Stainer

## Hong Kong firm gaining on Tandy

A HONG KONG company, EACA, has got Tandy on the run with a "work-alike" to its TRS-80 Model I Level II personal computer.

The system is being marketed in the UK through distributor Lowe Electronics of Matlock under the name Video Genie, and already represents about 35% of the original Tandy market.

In order to avoid repercussions from Tandy, EACA is marketing it in the US under a different name, the PMC-80. It is likely that the PMC-80 could impose on Tandy's market share over there as much as it has done in the UK, especially when latest market share figures from the US indicate that Apple has overtaken Tandy.

## Price

The PMC-80 has almost identical internal workings and layout to the TRS-80, the most obvious difference between the two being in appearance. It is a complete single unit with keyboard, cassette recorder and power supply, and any black and white TV will interface with it.

Unlike the TRS-80, further cassette storage is available on the PMC-80 via a second interface port.

Retail price in the US for the PMC-80 without a monitor is \$595; the listed price for the equivalent TRS-80 is \$849, but this includes a monitor. When the user buys a black and white monitor to go with the PMC-80, there is still at least \$100 price difference.

When it comes to peripherals, the work-alike system will take all those built for the TRS-80, but

only with a \$35 interface printed circuit board. On the back of the PMC-80 is a 50-pin bus rather than a 40-pin, which has been designed for an S100 chassis when it is developed. It is expected to be available this autumn.

The S100 chassis will allow the system to accommodate discs and all S100 peripherals. EACA plans to make the discs compatible with Tandy disc programs. The \$35 interface board is a 50-40 pin adaptor.

Apart from these differences, the PMC-80 and the TRS-80 appear to be the same. Both are Z80-based systems with 12K of ROM and 16K basic of RAM expandable up to 48K. EACA managed to purchase the same version of Microsoft Basic that is used by Tandy, so the graphics characters are the same. This means that there is complete software compatibility between the two systems.

## Winner

A spokesman from one of the Video Genie dealers over here, Microdigital, which has recently been acquired by Lasky, told Computer Weekly: "The Video Genie is the ultimate in good value and has proved a real market winner. We are very enthusiastic about them going into the education market and already some of our Tandy customers are switching to Video Genies."

Microdigital has stocked the Video Genie for about three months and is selling it for £379 including VAT. This price does not include a monitor, but the Genie can be used with any black

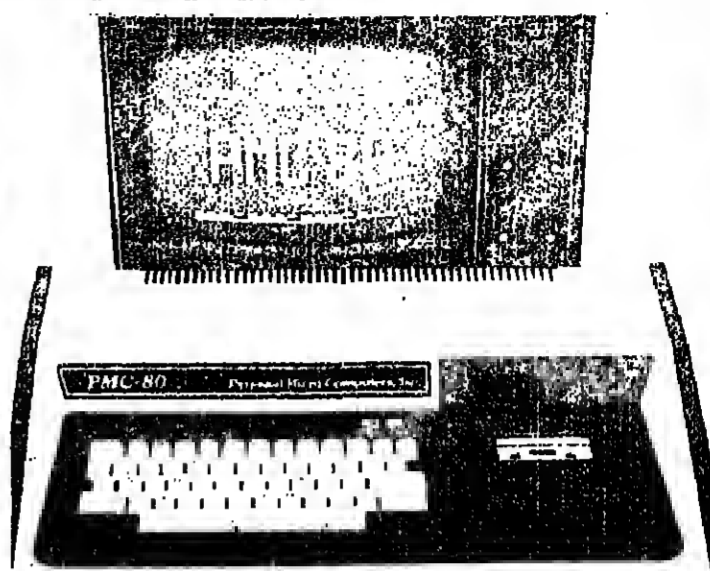
and white TV in the UK.

The PMC-80, which was on display at the personal computer stand at Wesco last month, is being distributed in the US by Personal Micro Computers based in Mountain View, California. It is offering a 90-day warranty period and a one-week delivery time.

## Search

The company is introducing its own line of peripherals for both the PMC-80 and the TRS-80. The main product is a Fastload Cassette Interface System, which can search and load cassette tapes 16 times faster. This is selling in the US for \$295.

For word processing applications, PMC has designed a lower-cost modification kit which is compatible with two popular word processor packages.



The TRS-80 work-alike personal computer, sold in the UK under the name Video Genie, and in the US as the PMC-80.

## CMOS version of 6805

MOTOROLA has developed a CMOS version of the 6805 8-bit microprocessor family which is available in production quantities now. The MC6805B, at \$45 a piece, offers a standby power consumption of less than one milli-

Watt and a consumption at 1MHz of 20mW. Included on-chip are 112 bytes of RAM, a timer, 16 input-output port pins and the bus structure. Intel claims its 2764, with an access time of 250 nanoseconds, is the fastest 64K Eeprom available.

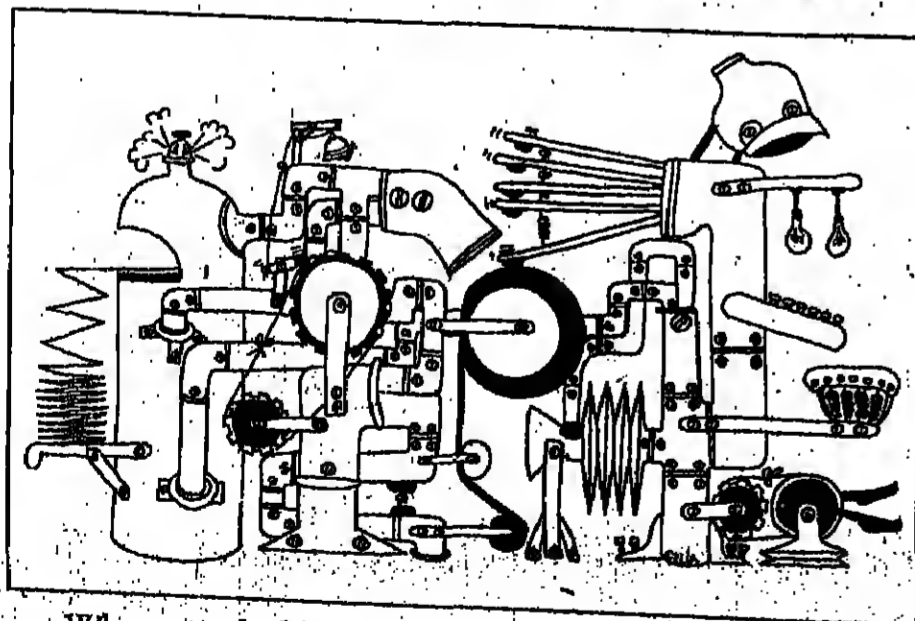
## Approved Eprom in production

SAMPLE quantities of Intel's 16-DEC-committee-approved 64K Eeprom, Erasable Programmable Read-only Memory, the 2764, are now available at a US price of \$163 each for 100-piece purchases. Volume shipments are expected to start early next year.

A committee of the Joint Electron Device Engineering Council in the US approved the 28-pin packaged 2764 over Texas Instruments' 28-pin version because of a two-line control function and the universal pinout.

It hopes that it can increase sales of the 64K device with an aggressive marketing policy so that it will become established even without JEDEC approval. It differs from the 2764 in six address and control pins, but at the same time is compatible with Motorola's 24-pin 64K Eeprom. Intel claims its 2764, with an access time of 250 nanoseconds, is the fastest 64K Eeprom available.

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## Business machine can generate software

A COMPLETELY new business machine is to be launched by Japanese company Sharp at Compec in November. Sharp has already contributed to the extensive Japanese penetration of the worldwide personal computer market this year with the introduction of its pocket computer, the PC1211 (CW, July 3).

Called the PC3200, the system incorporates a feature which up to now has existed only with mainframes, claims Paul Streeter, sales manager for systems equipment at Sharp UK in Manchester. The feature, a direct generator, enables the system to generate software independently, and Sharp UK has already received some software of this kind from Japan.

## Quicker

Similar to its predecessor, the MZ-80K, the 3200 will run on an eight-bit Zilog microprocessor, either the Z80 or the Z80A, and will be programmable in Basic. However, Streeter likened the 3200 Basic more to the Tandy Level Two, rather than the MZ-80K Basic, that is a more sophisticated version. The disc operating system is claimed to be quicker and better.

Internally the system possesses 64K of RAM and a standard 32K of ROM, for the Basic, which is expandable up to 72K. Mass sto-

rage facilities include double-sided, double-density minifloppies, with a twin floppy disc drive having a maximum capacity of 1/2-megabyte. Sharp hopes eventually to expand the systems to take eight floppy or eight standard hard eight-inch discs, which will take the capacity up to eight megabytes.

## Software

The complete system, which will cost about £3,000, includes a separate typewriter style keyboard with numeric pad and 80-column screen, with selectable 40 or 80 characters per screen, two discs and a printer. The system will also have an RS232 interface and a selectable 80 or 132 column printer interface.

Streeter said that Sharp is working on the software now so that it can be released with the system next February. "The software looks good," he told Computer Weekly. "It enables one to incorporate things like inverse and blinking video and vertically and horizontally rolling video."

The 3200 is also to be introduced on to the US market, unlike the MZ-80K aimed directly at the low end of the business system market. It should compete directly with the new Commodore and Apple systems, the "SuperPet" and Apple III.

## Panasonic briefcase system

A HAND-HELD computer system that will fit into a briefcase, with interchangeable peripherals, has been developed by Panasonic. Models are expected to be available early next year.

The HHC system comprises Pa-

nanasonic's 6502-based RL-H1000 computer, an acoustic coupler and telephone modem, a cassette interface, a video RAM interface for a home TV set, a mini printer, RAM and ROM memory expanders and an I/O interface for six additional peripherals.

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## PEOPLE and EVENTS

## ICL reorganises world marketing

ICL has made several changes in its worldwide marketing. Peter Ellis, deputy managing director, becomes responsible for the Worldwide Marketing Group, reporting to Dr Chris Wilson, the ICL group managing director.

Reporting to Ellis will be Les Cole, who becomes executive director, responsible for the central direction of operations of ICL's major subsidiaries in Australia, France, Germany, North America and South Africa.

A separate Services Group is being

set up, to manage the company's service business, consisting of Data, Datafil and education and training services. Director of the group will be Tim Holley.

Dr Wilson commented "In forming a Services Group I am emphasising the importance we see attaching to this high growth area for the company. The changes will shorten lines of communication, and realign units into groups with common characteristics."

## Marcol award winners

MARCOL has made its annual awards to five members of staff who have shown outstanding achievement.

Clive Brooke, technical manager of Marcol's Transition, Consultancy and Systems Division received an award for outstanding technical contribution for his work as senior technician on site at ICI Chemicals South Wales.

Merit Award of the Year went to Anne Kennedy, training officer with the company's Hotel Systems Division. The Sales Achievement Award was presented to Kevin Sullivan for his new business success resulting in an overall profit gain of 40% in his sector.

Manager of the Year is Ian de Laude Long, overseas manager of the Advanced Systems Division, and the Project Team of the Year is the Runk Xenon project team. The award was accepted on their behalf by John Garrett, UK manager of the Advanced Systems Division.

John Kelly has become sales engineer with Dicoil, after three years with the company.

Gerald Nimborg has been appointed manager of online databases for Auerbach. He has had 13 years' experience in the data processing industry.



An ICL 7700 Information Processor, installed at the British Enterprise Exhibition, gave the visitor information on all exhibits, either on a video screen in response to specific questions, or in the form of a letter produced by the correspondence-quality printer. Our picture shows James Prior, Secretary of State for Employment and Mrs Prior, looking at the 7700 at the opening of the exhibition at Simpson (Piccadilly).

## New consultancy

BELFAST's first computer staff recruitment company has been set up by Eamon Scullin. Scullin, a former business consultant with ICL, gained his commercial experience with Coopers and Lybrand and EOCO. His new company, called ESCO, will be based in Botanic Avenue, Belfast.

Ian Ginger has been appointed by Redfin Computers as Southern Region support manager. He joined the company in 1975 as branch support manager.

Planning Research Corporation International UK has appointed Peter Ward software products manager. He was formerly a director of Adserve-SMI.

## Computer League results

THE 1980 Computer Football League summer season has now ended and trophies and medals will be presented about the 16th March on the Thames near Thursday, October 16. Presentations, plus a disco and buffet, take place between 8.00pm and midnight. Tickets are available for £5 from 31 Crescent Road, London E1R. Cheques should be made payable to the Summer Computer League.

Division One			
Gryphon	10	8	2
Jedpu 'A'	10	7	2
CIW	10	4	1
Cheshire	10	3	2
P. Office	10	1	2

Division Two			
Forest	10	8	2
NCR 'A'	10	6	1
ICL	10	6	1

Division Three			
D'Almeida	10	2	2
Shetwood	10	1	2
IT'Scene	10	1	2

Division Four			
S.I.L.	8	5	2
U.C.S.I.	8	5	2
K'Sious	8	3	2
NCR 'B'	8	2	2
Logic	8	2	2
Camp. Sys.	8	0	0

Division Five			
A'bourne	6	4	2
W. Clinch	6	3	0
Hoskyns	6	2	1
Xorox	6	1	4
Rangers	0	0	0
Atkins	0	0	0



## DIARY

OCTOBER 13-14  
Seminar: Digital communications for satellite Technology Transfer Society. Munich, (01) 242 4045.  
Seminar: International technical marketing. Technical Marketing Society of America/TTS. London.

OCTOBER 14  
Meeting: The microcomputer: a complete package for the smaller user. A. Coates. Hull branch IDPM. Hull Great Hotel, Pernby High Road, North Ferry, North Hamberdale. 7.15.  
Meeting: Long haul optical fibre digital systems. IEE/TTE Birmingham. 6.30. Tel: (01) 836 3357.  
Meeting: New EEC machine translation system. Prof Yonick Wilke. ECS Natural Translation Specialists Group. King's College, London. 6.00.

OCTOBER 15  
Vendor-independent customer engineering. Keith Meadows. Central London branch IDPM. Pearl and Dean Studio, 15 Broadwick Street, London W1 6.00.  
OCTOBER 16  
Seminar: practical operations supervision and control. Colin Bendall. IDPM. The Industrial Society, Peter Runge House, 3 Carlton House Terrace, London SW1.

OCTOBER 23  
A bureau within the company. Stan May. IDPM West London to Oxford branch. Grand Metropolitan Informa-

tion and Processing, Wyvern Way, Rockingham Road, Uxbridge. 7.30.  
Electronics office. R. A. Smith. IDPM Essex branch. Philips, Eikon House, Bergholt Road, Colchester. 8.00.  
OCTOBER 29  
The impact of the automated office on the DP professional. Edward Cliff. Sheffield branch of IDPM. Grosvenor House, Sheffield. 7.00.  
OCTOBER 30  
Seminar: Managing a project. Richard Baul. IDPM. The Industrial Society, Peter Runge House, 3 Carlton House Terrace, London SW1. 2.00.

COMPEC 80 will take place from November 4-8 at Olympia, London. The exhibition is organised by IPC Exhibitions and sponsored by Computer Weekly, Data Processing, Systems International and Practical Computing magazines. Practical Computing will also sponsor Microsystems 81. Compec 80 will display computers, peripherals and systems, and include for the first time an IBM UK stand. Among IBM's exhibits will be the 3101 display terminal.  
Further information about Compec 80 and Microsystems 81 can be obtained from Chris Hipwell, Tel: (01) 261 8894.

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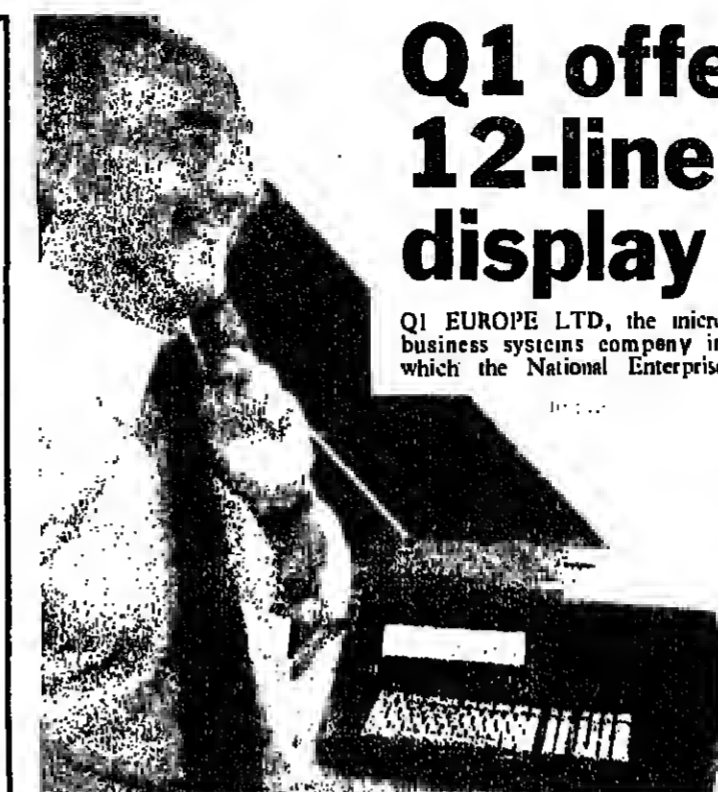
## Services show 24% growth

LATEST statistics from the Department of Industry on UK computer services show an increase of about 24% in total billings between the first quarter of 1979 and the same period this year when they exceeded £124 million.

Of the bureau services listed in the figures, interactive time hire showed the most impressive growth, from £7.5 million in the first quarter of 1979 to £10.2 million this year.

Under the heading of professional services, system implementation work saw a 60% rise to £21.4 million.

The total number of people employed in the computer services industry increased from 22,581 to 24,155 over the 12-month period.



Mike Munnally of Business Computers (Systemat Ltd) looks on one of the latest innovations from Q1 - a version of the basic unit with an 80 character plasma display which features reverse video.

## Q1 offers 80-character 12-line plasma display on Microlite

Q1 EUROPE LTD, the micro business systems company in which the National Enterprise

Board has a 50% stake, launched a whole range of new configurations and options for its Microlite desktop computer at Sibex last month. A major new feature is an 80-character 12-line plasma display, to replace the existing 40 character display, and a 25-line plasma is in the pipeline.

Q1 is committed to the plasma display and the ones used by the company come not from Burroughs but from a private US company based near Q1's headquarters, New York headquarters. They are custom-made for Q1, and the company argues that they have several benefits over CRT displays.

Expanding

From its own point of view, being less bulky than a CRT they are easier to package and generate much less heat. From the user's point of view they are claimed to be flicker-free and to pose no other health problems.

The family of Q1 Microlite systems is expanding rapidly. Basis of all the systems is a Zilog Z80-based microcomputer programmed in PL/I or Cobol. The systems range from those with twin 400K-byte floppies, but the company will add a 5-megabyte Winchester disc drive shortly and is planning to go up to 120 megabytes with a shared database system consisting of up to 64 workstations, each of which will consist of a processor plus screen and keyboard.

Bubble memories are also set to take over from floppy discs at Q1. A version with two Texas Instruments 92K-bit bubble memories was shown at Sibex, and a 1-megabit bubble is on the way.

To start with, Q1 will offer bubbles as an option with floppies standard, but when the price of bubbles falls sufficiently, the reverse will be true.

Q1 started out in word processing in the US, but the prime European thrust is data processing with word processing an add-on. However, the shared database system would form the basis of a shared logic word processor.

Q1 systems are manufactured in Southampton for the European market, and are sold in Belgium, France, Germany, Portugal and Scandinavia as well as the UK. Between 300 and 400 systems have been sold in Europe, both through dealers and with a direct sales force.

Next market to be covered is Spain.

## Harris into arrays

HARRIS Semiconductor is moving into the array logic business by second sourcing Monolithic Memories' family of PALs and Signetics' PLA 8100 series. In a year's time the company hopes to have working samples which can operate three times faster than the original devices.

All three companies have agreed that Harris should manufacture MMI's 16L8, 16R8, 16R6 and 16R4 PALs and Signetics' 8100 series of PLAs using its own TTL and ECL technologies. The chips will be pin compatible, but no mask exchanges are involved. MMI's devices have typical access times of 35 to 45 nanoseconds while Signetics' PLAs operate with access times of typically 60 nanoseconds. Harris

## Financial service from Dataskil

THE ICL software house Dataskil has entered the highly competitive financial planning market with an announcement of its strategic financial planning service for company directors, called Balance the Alternatives.

The service is aimed at service industries and manufacturing industries to help them control cash and productivity management. It makes use of Dataskil's business planning package Prosper, which uses the CBI recommended Value Added approach to productivity optimisation.

The package links the key factors of profitability and the decisions that have to be made on costs, pricing, pay and manpower to get a good return on capital.

Trade-off

PLAs and PALs work on similar principles to the PROM, which has a high degree of redundancy and comprises hardwired OR and AND logic gates. The PAL has hardwired OR but programmable AND gates, while the PLA is less redundant and has programmable AND and OR gates.

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THE Royal Shakespeare Company has launched a theatre booking service on Prestel through the pages of the British Tourist Authority. Tickets can be paid for by keying in a credit card number. An introductory offer gives £1.50 off tickets for the current production of Sean O'Casey's *Junos and the Paycock*, on at the Aldwych until November 8, starring Judi Dench and directed by Trevor Nunn (seen above).

## Query system for MDBS

AN ad hoc query system for the micro database management system MDBS has been introduced to allow interoperation in an English-like language. Called QRS it comes from Micro Data Base Systems, maker of the Codeval management system for microcomputers (described CW, Sept 26).

QRS allows users to interactively specify queries, reports and update more quickly than Basic, Cobol, Pascal and Fortran, says the maker.

For example: LIST NAME, PHONE FOR SEX=MALE, DEPARTMENT=43 and age <35 THRU DEPTS, EMPLOYEES would list all women under 35 in department 43 with their phone numbers.

Some report writing facilities are provided for more complex output, and retrieved data can be printed, saved or displayed on the VDU. Query definitions can be saved for future use.

Micro Data Base Systems, a US company, has appointed Systems Plus as UK agent. It is based at 19c Glengormley Park, Newtownabbey, BT25 7RE, tel 02313 42117.

MDBS costs between £200 and £1,000 and a hierarchical subset £235. QRS costs £200. A 64-page primer on micro database management systems is available from Systems Plus for £8.

## BTS in Hong Kong talks

DESPITE its plan not to enter System X for any telecommunications contracts before the middle of next year, British Telecommunications Systems is considering Hong Kong's requirement for a limited amount of digital switching equipment for which tenders are due on November 3. Since January, BTS has entered talks with the USSR, Romania, Yugoslavia and Australia, and although it was not able to bid for the first phase of the Irish network earlier this year, it expects to compete for the later phases in a couple of years.

# Training scheme may be voluntary

A VOLUNTARY training council for the computing services industry to take the place of a statutory industry training board looks likely to be set up, following discussions between the Manpower Services Commission and the Computing Services Association (CSA, October 2). The scheme would save service companies and

the DP departments of user companies from being drawn into the compulsory training levies and other arrangements involved with statutory boards.

Government support for the training council would be provided, probably of the order of £45,000 for three years, to get it started. Firms would pay for the

individual courses their staff attended. The co-ordinating body is expected to include representatives from the CSA, the BCS, and the IDPM.

The difficulty with computer training under the existing training board scheme is that so many computer staff work for user companies which already have to pay compulsory levies, for instance to the Engineering Industry Training Board.

The idea for the voluntary scheme was enthusiastically received at the CSA's annual general meeting, at which Alan Thomas of Data Logic was elected president. The new vice-president is Roger Graham of BIS.

Further success in the CSA's export efforts in Greece was announced, in the shape of an order for the design of an accounting system for the Greek Public Power Corporation, awarded to Arthur Andersen.

Addressing the CSA after the meeting, Peter Benton, managing director of British Telecom, blamed the backlog of the supply of communications lines on the disturbance caused by the ending of the pay freeze in 1978, but assured members he had plans for a normal service by 1982.

## Anything you can do...

ADVANCED versions of Prestel systems, which include the ability to convert from the French Teletel and Canadian Teletel coding standards, are running experimentally at British Telecom's Martlesham Research Laboratories.

The scheme is called Prextend and, as well as preparing for future enhancements to Prestel, it exists to show potential foreign customers that not only can Prestel do anything its rivals can, but specific methods have been developed to do it.

The parallel attribute coding used by Teletel enables the colour, size and other attributes of the

display to be changed for each character as it appears, while Prestel uses control characters which occupy a space on the screen each time they are used.

When this capability is implemented in Prextend, the information can still be sent to a standard Prestel terminal and produce a sensible display: that is, the text itself is not destroyed. This is also true of Picture Prestel, which enables part of the screen to contain a colour photograph retrievable from the database, and of the high resolution graphics using dynamically redefinable character sets (CW, April 3).

## Menus on Compuserve

MENUS and household advice from the magazine Better Homes and Gardens are to be made available online to users of Compuserve Information Service, the US time sharing service for hobbyists that already provides online news (CW, July 24). Users will also be able to order a range of computer-related books from their home terminals and pay for them by credit card.

The menu will include costs and nutritional information, and there will also be advice on gardening, decorating, crafts, travel and money management. One month's data will be held online at a time, on Compuserve's bureau in Columbus, Ohio. Eventually news from 11 different daily papers throughout the US will also be available in CIS's 4,000 subscribers.

Anyone with a standard terminal or home computer with communications facilities can access CIS via dial-up, paying \$5 an hour for connect time.

## Hobby club to go on Prestel

NORTH London Hobby Computer Club is to become an information provider on Prestel and publish teletexts as well as details of club meetings. It plans to use the Prestel pages of Practical Computing, which in turn publishes through IPC Viewdata.

# Chips help for non-NY banks

CHIPS, the New York system that handles transactions between clearing banks, is being enhanced to enable US dollar transactions involving banks outside New York also to be cleared the same day.

The banks benefiting from saving a day's interest will be foreign as well as US based.

At present transactions between New York banks go through the clearing house fund, while non New York banks are covered by the so called Federal fund.

Under the new system, scheduled to go live in October 1981, all transactions will go through a single fund — a facility known as one fund clearing.

The new facility was announced last month by John Lee, executive vice president of the New York Clearing House Association, the organisation that runs Chips.

Lee took the opportunity to make the announcement at Sibos 80, the international banking operations seminar staged in Copenhagen by Swift, the interbank funds transfer organisation.

## Not related

Swift and Chips are not related operationally in any way. Chips is a purely US run system for US dollar exchanges between banks, whereas Swift operates a worldwide message switching network transmitting a multitude of foreign currency transactions between banks in many countries.

One thing in common is that both organisations operate medium sized Burroughs mainframes. Swift uses Burroughs machines in Amsterdam, Brussels and New York State to switch multiplexed transaction messages transmitted at 96,000 bps by concentrators in the countries that use the service. Chips uses several Burroughs machines in New York for transaction processing.

A system that would have been a lot more like Chips if it had ever come to fruition was the ill fated Chips system that the UK clearing banks spent £2 million on before it was scrapped early this year.

Chips, the Clearing House Automated Payments Scheme, would have been based on an ICL 2960 system at the Bankers Automated Clearing Services centre.

It was killed partly because smaller potential users objected to the cost but also because the whole concept of a system based on a central mainframe was seen as rather outdated. Any future system will probably involve a network linking user banks' own computers.

# BCS in a quandary over refresher test

CHANGING the examination syllabus and introducing refresher tests for old established members are just two of the changes being considered by the British Computer Society, said president Julian Bogod last week.

Speaking to a record attendance at the Hampshire branch of the BCS, he said that BCS membership should be considered as offering proof to employers of sound technical expertise, if not necessarily the particular skills needed for a particular job.

In reply to criticism that no other professional society stipulated re-testing of members, Bogod said that computing moved so fast that it was necessary for members to show they had kept up with the mainstream of developments.

He recognised that this might mean the loss to the society of those members who moved into more general management roles.

Outlining the value of membership, Bogod said that "MBCS" currently stood for all the qualities expected of a professional — technical competence, maturity and responsibility, integrity, practical experience, commitment and social responsibility.

He cited employers who paid more to members than non-members (Prudential and Sun Life insurance companies), included membership as a requirement when advertising job vacancies (the Civil Service) and paid membership subscriptions (IBM).

## Doubted

But employers' representatives present doubted the value of membership. David Barron, Professor of Computing at Southampton University and an employer as well as a teacher, said he took no account of BCS membership when interviewing job applicants and would find it hard to convince undergraduates entering the profession of the advantages of joining.

Trevor Longman, managing director of IBM Information Ser-

vices, even doubted the relevance of the words "computer" and "professional." Noting that the former might encompass anything from a word processor to a mainframe, he said that the word "craftsman" is more accurate when describing workers in the industry.

They are people who do things, rather than study how to do them, he asserted. He added: "As an employer I want men with (Bogod's list of) qualities, but BCS does not have a unique hold of them."

Longman reported the result of a survey of a batch of 105 job adverts the previous week which showed only one mentioning BCS membership as a qualification.



## PPL blows out its tenth birthday cake

A COMPANY which has built its business entirely on packages celebrated its tenth birthday last week. In the last decade Package Programs Ltd has adapted and promoted many widely used packages, the most famous being the MMS general ledger and accounting system.

The continuing success of PPL in the software market was explained by chairman Roy Taylor in his celebratory speech. "We have established a successful philosophy in selling package programs with no modifications. Only in this way can we maintain systems, and we will expand because of our basic philosophy," he said.

Not a preparation for underwater exploration — our picture shows behavioural scientist Jane Alexander taking part in an investigation of the human factors involved in using the new Monarch PABX switchboard, conducted at British Telecom's Martlesham Research Laboratories.

Like similar devices used in aircraft cockpits, the mask enables eye movement patterns to be studied to see if the keyboard layout can be improved.

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DATA/PRO/COMPUTER WEEKLY USER SURVEY ON BUSINESS SYSTEMS AND MINIS

# HP top of user 'pops' — but Burroughs gets the thumbs down

HEWLETT-PACKARD comes out on the clear winner and Burroughs gets the thumbs down in the business computer and minis section of the Datapro Computer Weekly survey of satisfaction among UK computer users.

Companies with fewer than 10 users have been eliminated from the results, reducing the field from 33 to 17.

Four companies, Redifon, DEC, IBM and Texas Instruments, join Hewlett-Packard with a rating of 3.0 or more out of four. A whole mass are on 2.9 including ICL, GEC, CTL and Prime, and NCR sits the bunch with 2.7. There is then a gap of over half a point before Burroughs hurls up the rear with a worrying 2.1 rating.

**Easy to operate**  
Hewlett-Packard, with 21 users in the survey, is represented by all three lines: the HP 3000, 2000 and 1000, with 15 users of the first. The company rated particularly high on ease of operation, reliability, system software and maintenance.

As with the mainframe survey (CW, September 18) technical support was marked low for all manufacturers, but Hewlett-Packard was once again the top of a low-rated set. Only one company scored as high as 3.0 in this section, and that was IBM for its documentation.

DEC and IBM tied for second place with a 3.1 rating for user satisfaction.

The full spread of PDP-11 machines was represented in the survey, and among the 136 DEC respondents there were also 11 PDP-8 and six VAX users.

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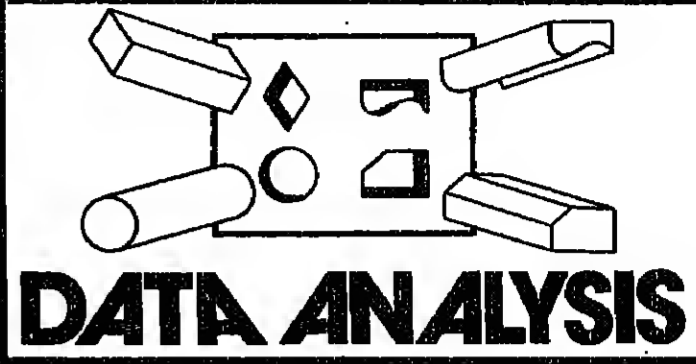
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## DATA ANALYSIS

by Ian Palmer and Rosemary Rock-Evans

1. Status, eg "draft", "ratified".
2. Definition. A precise statement, which makes it clear whether or not an entity is of the type being documented.
3. Owners of entity occurrences. The users authorised to create, delete and amend occurrences of the entity type together with any special confidentiality considerations.
4. Occurrences. The maximum, minimum and average occurrences of the entity in the area under study and also the extent to which the population is growing or decreasing.
5. Other observations, eg timeliness, how long records of the entity type are kept and how up-to-date they are; consistency, what other entity types must exist if this entity type is to exist; and availability, where details of the entity type are available at present.
6. In this article, steps have been described which enable the analyst to identify some of the entity types in an enterprise. As will be seen in later articles, the list obtained using these steps is not likely to be complete; but the more fundamental entity types will have been identified, on which the next stages in entity analysis can be based.

# Defining essential facts and functions

IN the first article in this series, data analysis was introduced as a systems development methodology.

## Section 1 — Part 2

of our series describing a systems development methodology

The two phases of data analysis — functional analysis and entity analysis — were described, and it was emphasised that analysis was undertaken separately from any design considerations.

The following five articles in the series will be dealing with entity analysis. This phase is concerned with finding out what there is in the business and what types of things and facts it needs in order to operate.

**Entities and entity types**  
The building block upon which all of entity analysis is based is called an entity, and an entity is "anything relevant to the enterprise about which information could be or is kept".

The Oxford Dictionary says that an entity is: "A thing's existence as opposed to its qualities or relationships". This is an important point in entity analysis. An entity is represented by data. It is not itself data. For instance, Rosemary Rock-Evans, exclaims on a person but her name, date of birth, sex and so on are just "qualities" which may be represented as data about her.

A second term used in entity analysis is "entity type". An entity type covers all the entities relevant to the enterprise, which fit a given definition. The entity Rosemary Rock-Evans appears to be of the Person entity type. (The fact that the entity type could be Employee, Wife, Consultant, etc, will be dealt with in a later article.)

In Figure 1 an example is given of some entity types and entities or "occurrences of the entity type". (Strictly speaking it does not show entity occurrences, but rather the names by which these entities are commonly known.)

Entity Type	Entity (or occurrence of entity type)
Person	John Smith Jimmy Mack Aileen Cooper
Building	23, Acacia Avenue 288, High Holborn The Willows, Long Lane
Car	LSM 895

Figure 1. Examples of some entity types and entities.

**Brightonholme Hospital**

The hospital deals with patients on an appointment system. The patients must make an appointment for a clinic session held at one of the hospital's clinics. The doctors are then allocated one or more appointments within a clinic session, but only one doctor will be present at the appointment.

If a patient attends for an operation, the operations are scheduled and allocated to theatre sessions held in the hospital's operating theatres.

Figure 2. The entity types at a hospital, are in bold type.

be kept, for instance, accidents, illnesses, inquiries.

**Conceptual entity types.** A business can invent or use purely conceptual entity types, both intangible and in some cases unique to the business, which might be: employment (the time a person spent in a job), cost centre (an area of cost control within the business), shop order (an order placed on a jobbing shop).

**Determination of entity types**  
Determining the entity types of a business tends to be an iterative process, based on an increasing understanding of the business and how it operates.

It is easy to see that the "real" entity types will be the easiest to discover and the "conceptual" the hardest, but if the guidelines are followed, all the major types should be determined in a relatively short time. So how should entity types be determined?

1. If possible, as a starting point, a description of what the business does should be obtained, covering what objects the business handles, what it makes if it is a manufacturing business, what it may deal with and what it needs in order to operate. This could even be the annual report, and certainly a divisional operating manual. Documentation of existing systems is likely to be useful, so long as care is taken to distinguish between entities inherent to the enterprise and concepts introduced for the convenience of the system.

In Figure 2 on example of a hospital is given. The entity types have been given in bold type.

In the example there are some "real" entity types — patients, doctors, clinics; some activities — appointments, operations; and some "conceptual" entity types — clinic session, theatre session.

Note that each noun or noun phrase may name a candidate entity type in a description of this nature.

2. The next stage is to find out what the enterprise collects information about. This will involve a search of existing records, files and papers. In our example of the hospital we would expect to find such things as patient record cards, doctors' record cards and so on, which confirm our choice of patient and doctor as entity types.

We may also find new entity types: patient's medication schedule — the drugs the patient has been prescribed (information collected may be the time the drug is due and the dose); patient's ward record — the patients which have been allocated to the ward (information

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# Why maintenance of software should be contracted out

MAINTAINING your installation's software is the job we all love to hate. It is often given to a junior member of staff who then finds that the specs are not quite up to the standard recommended by either IBM or the National Computing Centre.

The lucky programmer may even find that all he/she is getting is a program listing plus a couple of flowcharts!

As some terms mean all things to all men in DP, it is necessary to define what is meant by the term "maintenance". In this instance we are talking about the maintenance of software packages in a user's installation and this means the continual updating and slight modification that occurs from time to time.

There are many reasons why users have to maintain their software, the most common being changes in the law and technological innovation such as a new peri-

pheral that doesn't quite have the same codes as the present system.

## Necessity

The necessity for maintenance arises with packages having the following characteristics:

1. Between 250,000 and one million lines of source code;
2. Only 20% of the facilities of the package are currently used in the installation;
3. Another 20% of the facilities in the package are potentially useful to the installation. The installation does not use these facilities on account of their low cost/benefit ratio. The low ratio is due to the expense and risk involved in bringing the facilities into use;
4. Not every user uses the same 20% of the package and there is a 20% of the package that nobody uses;
5. There is a new release of the package every six months and a

typical installation is three behind with its release level;

6. A good man has to be put on the maintenance;
7. Some maintenance is critical and when it has to be done it causes trouble; and,
8. Most maintenance has no pay-off.

The operating system and most items of system software come into this category. Major applications packages may also have similar characteristics and often their nature makes this a large and time critical job which disrupts other operations.

## Problems

Often resources have to be devoted to the maintenance that are urgently required on user oriented systems. How can this disruption be avoided?

The problems are due to factors arising from the characteristics of a

major software package. The detailed knowledge of the package is only used occasionally and, inevitably, time has to be spent re-learning when the knowledge is needed.

The relearning is always less than perfect which is probably one of the reasons why critical maintenance tends to go wrong. Another reason could well be that however well versed the maintenance programmer is in the software package he is probably less well informed on the requirements of the application area.

This can cover anything from computer system operation to the teleprocessing network or the user requirements from the applications package.

This lack of understanding can lead to a misinterpretation of the modification requirements. In any event it imposes a need for extensive testing to ensure that there is complete understanding all round.

## by Cliff Dilloway



Keeping up with the new releases of software and updating existing suites is always a low priority job and this occasionally results in problems. The whole responsibility could be contracted out, as is done for hardware.

Consultant Cliff Dilloway explains what is involved and describes how the use of specialists can prove beneficial.

The management at most installations believe that they have to keep software package maintenance under their wing as their own direct responsibility. This attitude contrasts strongly with the view taken on hardware maintenance.

In reality a lot of what is called hardware maintenance is software maintenance of a similar nature to that we have described carried out on the microprograms held in control storage.

## Justification

Is there any justification for there being a cut-off level in the software hierarchies above which maintenance cannot be contracted out to support organisations? Let us consider what such a system support company would need to do.

First, it would need to maintain a level of competence in the software. Its specialists are likely to maintain a higher level of competence than a maintenance programmer who only looks at the software every 12 months or so.

Second, the maintenance service needs to be instantly available. However if the service is up to date with its preventative maintenance (application of releases and fixes) the number of occasions when true instant availability is necessary will be very rare.

But such support has to be as prompt as that for hardware maintenance.

Third, it needs to understand the application requirements. As a specialist's service it should be able to understand what the software is required to do much better than the occasional maintenance programmer.

The ramifications of accounting, stock control or payroll are easily understood by those not conversant with the terminology. Users appreciate it when they only need to sketch out their requirements for a specialist to understand and implement them.

Fourth, a service company should be able to keep the cost of contracted maintenance to no more than if the work was being done by a staff programmer.

This is likely to be so, as a specialist should be able to do the work in a much shorter time than the maintenance programmer who has to go back to the books and square one every time he tackles a job.

These requirements can be met. They are, after all, the requirements that a computer bureau user expects from the service given by the bureau.

Where is such a service to be

found and what will the charge be? Ideally one would like to employ a large organisation with the resources to meet any demand.

But the service needs to be personal to the installation. Somebody who is known and trusted has to be allowed in at all sorts of odd times to carry out the maintenance tests.

Large organisations are unlikely to fit this description, and small software houses, which would seem to offer a solution, are unlikely to have the staff with the necessary experience.

So I suggest that a suitable person to whom software maintenance could be contracted would be either the proprietor of a small software house or a one man consultancy specialising in this type of work.

Many installations have lost a systems programmer who leaves a gap in the system and he may well be the ideal person to employ. Many members of the Association of Independent Computer Specialists fit this description.

The basis of payment could be an annual contracted sum. At first sight the cost may look a bit high but bearing in mind that there is no National Insurance or pension contribution involved, it will soon be realised that this can be a very economical buy.

There are always additional overheads on just employing an individual and these too are saved. The arrangement could be the for a fixed annual sum the maintenance programmer would make all such changes as were required by the software supplier or were sought by the user.

## Habit

Additionally, an extra initial payment may be necessary in order to catch up with the current backlog. It may seem strange to a data processing manager but long maintenance is often carried out on this contracted basis.

It is in the interest of the contractor to carry out preventive maintenance and, once you contract to get to hear of a particular problem he will come and fix it before you ever discover that it exists.

At the present time there is very little contracted maintenance of software. In the future it is easy to see that an installation will be using "get the programmer in" when a problem arises, in much the same way as they might otherwise call a plumber, electrician or other specialist.

It is only habit that insists that all programmers should be on call on their own staff.

## COURSES

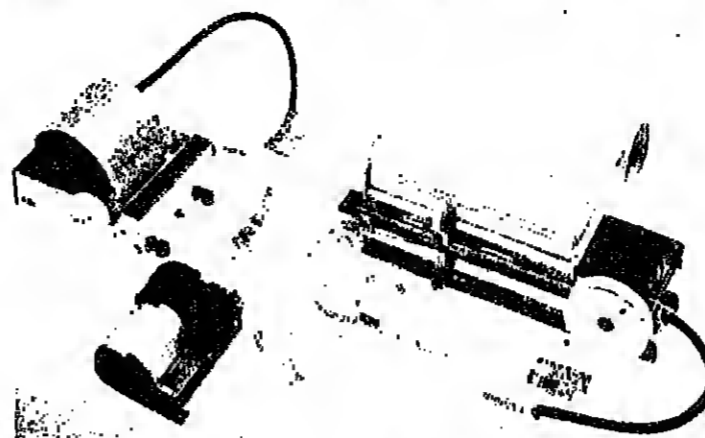
THE Management Studies Centre of ICFC is running two courses designed for small and medium sized firms who are considering computerisation for the first time, or who wish to upgrade their facilities. Computers - Successful First Time Use will be held in Lpndon on October 29. Negotiating Computer Contracts will take place in London on October 30. For further information, telephone: Neil Crichton-Miller on (07535) 56633.

A PRACTICAL course on visual simulation techniques with emphasis on hands on experience, is taking place between December 15-19. Aimed at management scientists, production engineers and programmers, the course is being organised by the University of Lancaster.

For further information, contact JG Crocker, Centre in Simulation, Department of Operational Research, Gillen House, University of Lancaster, Bailrigg, Lancaster.

HANDS-ON Microprocessor Workshop is a four-day course to provide a foundation in the skills required for design, programming and world interfacing of microprocessor applications. A microcomputer training system is given to each participant for use on the course. The course will be a number of skills including how to use interrupts, internal devices and D converters and the selection and use of software development tools. No prior background in microprocessor application is required, but an engineering/technical orientation is required. The course, organised by Integrated Computer Systems, will be held in London from October 23-27 November 25-28 and January 19-23.

## PRODUCT NEWS INTERNATIONAL



## Micro based pulse generator

ELFX has introduced a microprocessor-based, programmable pulse generator that is said to offer repetition frequencies up to 100 MHz with amplitudes up to 22 volts, using independently set high and low limits. Programmable rise and fall times from less than three nanoseconds are produced.

Called E-H 1560, up to eight independent outputs may be

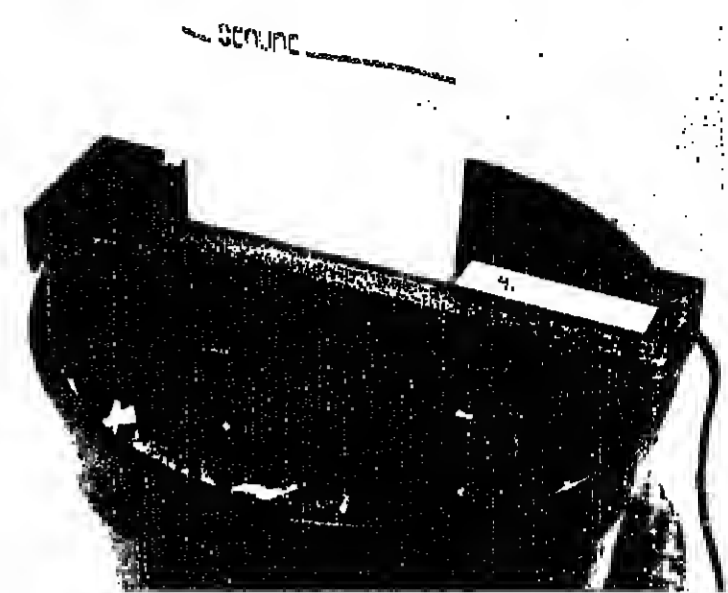
simultaneously controlled through the use of slave units and up to 10 pre-defined programme set-ups can be stored within the pulse generator to save interface activity time.

## Control

It features front panel control of all functions through a built-in keyboard and a parameter display showing current settings for channel number, program number, period, delay, width, rise time, fall time, high level and low level. This display operates whether the instrument has been set up from the front keyboard or through remote control.

The E-H 1560 can be driven remotely through its IEEE-488 interface or its RS 232C interface, both of which are standard.

Elux Systems Ltd (CW), Crossway House, Bracknell, RG12 1DA. Tel: 0344 52929.



## Portable document destroyer

THE Bin Top is a portable shredder for destroying documents and has an adjustable 6-inch extension arm, which fits over most standard waste paper bins. It is available from Sealine Office Equipment, and can be moved to any location within reach of a 13 amp socket. It weighs eight pounds and costs £89 plus VAT. Sealine Office Equipment (CW), Sealine House, Geddings Road, Hoddesdon, Herts. Tel: 09328 65525.

## Distributor

GMT PRODUCTS has been appointed a distributor for the range of Alpha-numeric printer machines and interface cards from Matsushita Electric.

GMT Products Ltd (CW), 22 Hartfield Road, Wimbladen, SW18 3TD. Tel: 01-947 7234.

## Vacuum resin casting plant

A VACUUM resin casting plant has been announced by Balzers High Vacuum, for pouring small electronic components.

Called the GAT 227, it consists of two independent 5-litre heated discharge mixers working under vacuum in which resins are degassed, then pumped into the flow mixer where the activated resin compound is mixed in.

When the casting cycle of the four dosing valves is complete, the trolley returns automatically to its starting position.

Resin mixing ratios can be adjusted from 1:1 to 1:20 and the dosing valves can deliver infinitely variable charges from 0.03 to 0.35cm<sup>3</sup>. Pallet transport travel is

17mm per cycle. The control system incorporates a pot life monitoring system and flushing arrangement. The plant measures 1,700 x 1,700 x 800mm.

Balzers High Vacuum (CW), Northbridge Road, Berkhamsted, Herts. Tel: (04472) 2181.

## Desk top shredder

A SHREDDER with a cutting speed of 10.6 meters per minute is available from Rexel.

Called the Verishred Desktop, it has self-sharpening cutters which are guaranteed for two years. The shredder is slightly larger than a typewriter and has a shred width of 4 millimeters. It retails at £231 plus VAT.

Rexel (CW), Gatehouse Road, Aylesbury, HP19 3DT. Tel: (0296 8141).

## Word processor that can prepare telex tape

A WORD processor capable of preparing telex tape is available from Volker Craig (UK).

Called the Teletaper, it links a QWERTY keyboard and a video terminal with a telex preparation unit. It is available singly or as a complete unit. Teletaper enables 16 pages of text with a capacity of 2,000 characters each to be prepared and stored for transmission.

Used in conjunction with Teletouch, the telex machine can be kept clear for receiving and sending messages.

The Teletaper costs £1,200 and the Teletouch from £1,300 for a 50 chps machine, to about £1,800 for the 75 chps version.

Volker Craig UK (CW), Volker Craig House, Tolpita Lane, Watford, Herts. Tel: (92) 46043.

## Digital-to-synchro converter

A DIGITAL-TO-SYNCHRO converter that is pin programmable for either 16 or 14-bit resolution has been introduced by Natel Engineering.

The converter, called DSC5116, has a transformation ratio of  $\pm 0.05\%$ . Power supply requirements are  $\pm 5$  volts.

Short-circuit and thermal overload protection are incorporated in the converter.

The output of the DSC116 is

compatible with any 3-wire synchro or 4-wire resolver. The reference input can be either 26 V-rms or 115 V-rms at 60 or 400 Hz. The unit measures  $3.1 \times 2.6 \times 0.82$  inches. A hermetically sealed metal case is available as an option. Prices start at \$495 to 1.9 quantities.

Natel Engineering (CW), 8954 Masood Ave., Canoga Park, CA 91306. Tel: (0101-213) 882 9620.

## Range of DP furniture

A RANGE of DP furniture, manufactured by 3K is available in the UK from Black Arrow.

The Compact M200 BDP range provides a facility for varying the VDU screen angle. All BDP desks are equipped with cable entry facility and hinged top models enable excess cable to be stored inside.

Work stations may be designed using components from this range to provide a single or multiple

operator station as required. Components in the range include a hexagonal turntable with revolving top, forming a three-way work station, costing £375; two sizes of desks for VDUs costing £104, £158; and a side table with revolving top priced at £188.

Black Arrow (CW), 748 London Road, Hounslow, Middlesex. Tel: (01) 572 7474.

## Low-cost QWERTY keyboard

FROM Rastra Electronics comes the Synertek Systems KTM-2 low-cost keyboard, for use with video terminals. It provides a full ASCII keyboard and the logic to display 24 lines of 40 characters each with full graphics.

The keyboard has 54 keys and generates 128 ASCII characters - upper and lower case letters, numerics, special and control keys - with the graphic and alphanumeric characters capable of simultaneous display.

Rastra Electronics Ltd (CW), 275-281 King Street, Hammer-smith, London, W6 9NF. Tel: 01-748 3143.

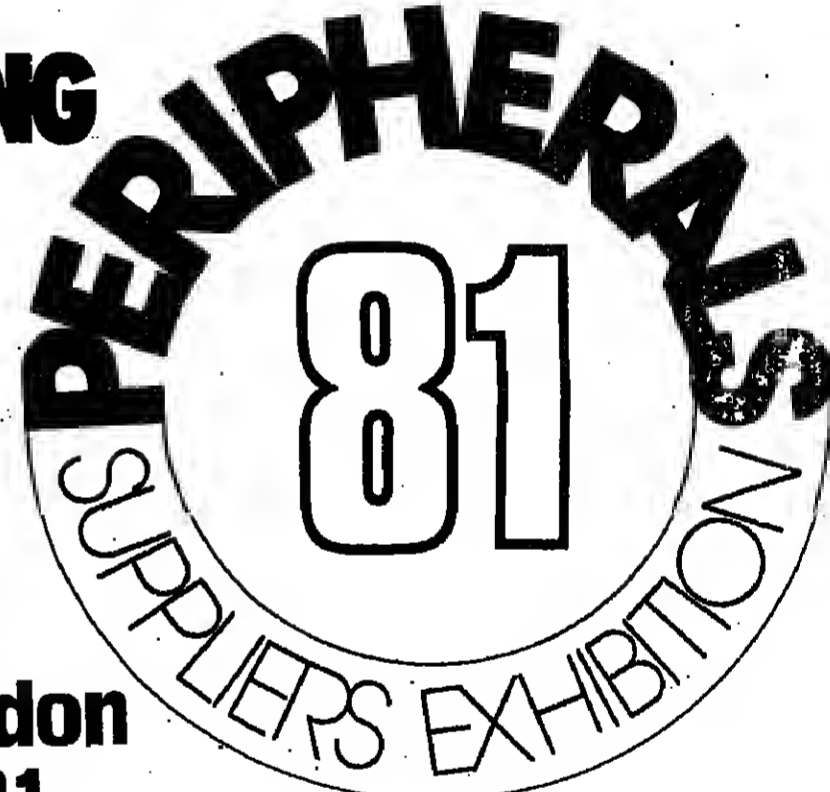
## Daisy wheel

A DAISY wheel with upper and lower case characters that is compatible with Qume kit is available from TSE Computer Supplies. The 12-inch wheel has a light italic font.

TSE Computer Supplies Ltd (CW), 31 Kennington Church Street, London, W8 4LL. Tel: 01-937 3666.

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Northamptonshire County Council  
Northampton House  
Northampton NN1 2HE  
Further details are available from Mr  
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04833. Enquiries 5185

## DATA ANALYSIS

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# COMPUTER WEEKLY

OCTOBER 30, 1980

## RECRUITMENT & EDUCATION SUPPLEMENT

the most informative publication of its kind in the UK

In spite of rising unemployment the computer industry continues in its demand for a regular supply of qualified computer people. As the market expands, so to does the need for new skills and abilities. Although more and more training facilities are available, the chronic shortage of manpower remains, causing a major problem for all companies involved with computers.

Our annual Computer Weekly recruitment and education supplement, especially planned to coincide with and be available at Compec '80 — Britain's biggest computer exhibition — will be packed full of valuable information covering the whole spectrum of the computer job market. Editorial contribution will be substantial, appealing to data processing professionals, as well as the next generation of young people who will be required to take up the

challenge and share in the achievements of the next decade and beyond.

This year's supplement will be published on October 30 and distributed in the normal way to all Computer Weekly readers. Copies will also be available to visitors from the Computer Weekly stand at Compec. Last year, some 34,745 visitors attended the exhibition.

The supplement is a unique publication, being the only newspaper of its kind produced in the U.K. dealing specifically with the subject of careers and job opportunities for DP personnel. The combination of the supplement's extensive editorial support, the large circulation, and Computer Weekly's standing in the industry, means this supplement is a must for recruitment advertisers.

Computer Weekly has the largest circulation in the specialist computer press (91,656 ABC July-Dec 1979). This has increased continually over the years to reflect the ever growing number of personnel in the computer industry. Additionally, and equally important, the newspaper has the highest number of individually requested copies of any weekly computer publication.

For further details regarding the supplement and the special Compec *free* computerised recruitment service, contact your nearest Computer Weekly Classified Office: London: 01-261 8028/8019/8174/8097. Manchester: 061-872 8861. Birmingham: 021-356 4838.

# COMPUTER WEEKLY

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# Appointments

## THE NEWSPAPER COMPUTER PEOPLE RELY ON

# Appointments

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## Contracts for Analysts and Programmers

Ref:			
IBM	8100/4331 DOS/VSE Systems Programmer for long-term contracts. Many benefits.	MIDDLE EAST	231
IBM	OS Assembler Programmer. Cobol helpful.	SURREY	234
IBM	OOS/VSE BAL CICS Systems Programmer. Urgently required for conversion work.	SURREY	229
IBM	OS/MVT Analyst/Programmer with PL/I + ATC experience for interesting project employing graphics package. Ability to handle two- and three-dimensional graphics.	FRANCE	227
IBM	3031 OS Cobol Programmer	S. COAST	229
VAX	RSX Cobol Analyst. Long-term contract.	GLOUC.	235
CORAL 60	For long-term project	BENELUX	239
IBM	9100 COBOL CICS. Immediate start, flexible, new development project. 9 months minimum. Open item billing system.	LONDON	239

### ICL 2900 + IDMS

Our client, based in Kent, is building a team for an important on-line development on ICL 2978 hardware using VME/B and COBOL/IDMS. If your programming skills match the requirement, and you are interested in a well-paid six-month contract starting now, contact Mory Robertson on 01-491 4709 (daytime) or 01-435 9400 (evenings and weekends).

These represent just some of the opportunities available to experienced computer professionals. Whether you are an established contractor preparing for your next assignment, or permanently employed and interested in gaining expert advice on all aspects of contracting talk to the Knight Software team now — Mory, Denise or Richardson 01-491 4708 (01-409 0280 evenings and weekends).

## Analyst / Programmers : Programmers

### SOUTH AFRICA

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### ANALYST/PROGRAMMERS

For both mainframe and System 34 work. You should have several years' sound practical experience in programming and systems design and implementation. A good knowledge of COBOL and/or RPG2 is required and ideally some experience of programming under CICS software.

### PROGRAMMERS

For both areas. You should have good programming experience in COBOL/RPG2 together with a knowledge of IBM mainframe and System 34 equipment.

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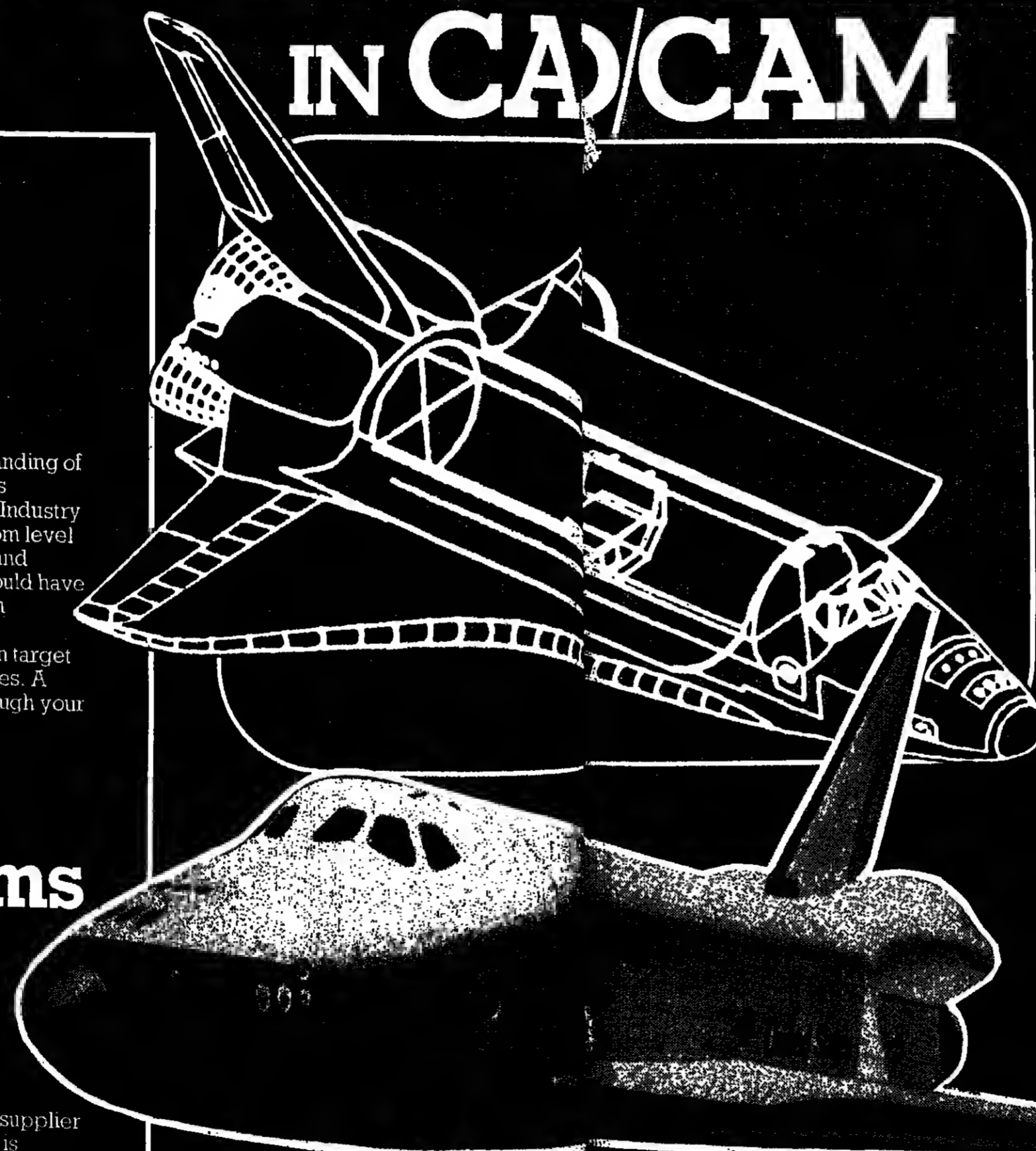
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CAD Systems experience is an essential either with a manufacturer/supplier of CAD Systems or with a client company. A technical qualification is desirable and it would be advantageous to have experience in mechanical, electrical/electronics, power/process or construction industries.

Your main areas of responsibility will be to provide professional applications advice and guidance to prospects and customers and to demonstrate the Applicon product range. The training of Applicon users staff is another prime task.

Initial induction training will cover all aspects of Systems and Applications dependant on experience and will take place at Applicon's headquarters in the U.S.A.



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North Cheshire was formed four years ago.

Exceptionally successful, the Company, still with a relatively small but dedicated and dynamic team offers significant opportunities. Applicon has committed itself heavily to an R & D Programme, a pattern of reinvestment that will ensure that the Company remain leaders in one of the most exciting areas of computer application.

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Ideally you will have worked on DEC PDP II Systems with manufacturer or user. You should be familiar with discs, tapes, memories, displays etc. A 'systems' approach to problems and the ability to think clearly and logically is important.

Whilst a major part of your work load will be systems problem solving you will also be called upon to assist in installation, support and sales, particularly exhibitions and trade shows.

A six week programme of product training will be undertaken in Burlington, Massachusetts, USA.

All positions have an attractive range of fringe benefits in addition to salary, car and relocation package and offer excellent opportunity for job satisfaction and career progression.

As I.M.P.C. have been exclusively retained as consultants to Applicon all enquiries or applications should be made to John George, Managing Director, on Manchester 061-236 7026 or if you prefer write to him at our Manchester Office at the address below:



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**JBA****MIDLANDS****Territory Manager - Sales**

**West Midlands** **Earnings c. £15,000 inc. car**  
Our client is one of the largest British owned computer manufacturers and an acknowledged leader in its field. Their product range and marketing network throughout the U.K., Europe and the Middle East is outstanding. They now require a further TERRITORY MANAGER for their West Midlands marketing branch.  
Applicants should ideally possess successful d.p. sales experience but those able to demonstrate sales potential will be considered. Excellent training facilities are provided. Applicants currently resident in the West Midlands will be given preference.  
This position offers genuine prospects in a solid, professional company.  
**Contact: Mike Galtskell**

**Team Leader**

**Nottingham** **up to £7,500 + Benefits**  
An opportunity exists for a Team Leader to work on a number of challenging applications currently under development within the Research Department. The company is well known and respected and has an advanced computer installation comprising main frame and mini computers.  
Applicants should have ideally 5 years programming experience and be proficient with FORTRAN, COBOL or Assembler languages in an IBM environment. Familiarity with mini computer applications development would be desirable but the ability to lead and motivate teams of programmers and analysts is essential.  
**Contact: Bev Stevens**

**Team Leader - Programming**

**Birmingham** **£6,500 + car scheme + 2 Benefits**  
This mini computer systems company, a very effective subsidiary of a prominent and respected group, continues to operate successfully throughout the U.K. They now seek a PROGRAMMING TEAM LEADER for their Birmingham office.  
Applicants should have 3 years COBOL experience on any hardware and must either have acted in a supervisory role or have developed sufficiently to be capable of assuming this responsibility.  
Conditions of employment are impressive and the benefits considerably enhance the basic salary.  
**Contact: Mike Galtskell**

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**Gloucestershire** **£6,000-£8,000**  
This computer services company of a large trading group with branches throughout the U.K. have a vacancy for a SYSTEMS DESIGNER.  
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**Contact: Mike Galtskell**

**Programmers**

**Kenilworth** **c. £6,500**  
An organisation involved in the development of a new international project is seeking to recruit a number of programmers. The work will be challenging and will provide ample opportunity to develop technical skills in the on-line, communications and database fields.  
Applicants should have at least 1 years IBM COBOL experience and have the desire to work on the development of applications in an IMS DB/2 environment.  
**Contact: Bev Stevens**

**Gloucestershire**

Our client, located in a very pleasant area, is a long established and respected division of a large and successful international Group. In order to develop systems to support the integrated administrative and distribution activities of several member companies they require:

**Systems Analyst**

**£6-7,000 Review 1 December**  
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**£6,500 Review 1 December**  
Candidates should be educated to A level and possess 2 years COBOL programming experience preferably on ICL 1100 or 2900 equipment. Knowledge of PLAN and FORTRAN while being an advantage is not essential. These are excellent opportunities to work on interesting projects in a purposeful atmosphere. Relocation assistance and normal large company benefits apply.  
**Contact: Mike Galtskell**

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Equipment includes IBM 3033, 3032 and UNIVAC 494, 1100/60 used for real-time, batch and network communications processing.

Applicants should have either a good knowledge and experience in data processing and/or have graduated in computer science, economics or science.

This position demands analytical thinking, above-average adaptability, self-motivation and enthusiasm. A knowledge of the programming languages COBOL and/or FORTRAN in addition to some German would be an advantage.

**System Programmers**

For the Operations Department in the Data Processing Division in Frankfurt, we are looking for System Programmers for our central system UNIVAC 494 and 1100/60 also IBM 3033 and 3032.

Applicants should have either graduated from a university or completed a technical qualification in the area of computer science, economics or science.

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Ref: SW1/0910/CW

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Ref: SI/0910

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Additional Programmers, Analysts and Project Leaders are required now to enhance the development team of a major organisation able to offer a secure future and positive career development. Extensive use is made of large IBM mainframes and mini computers to develop systems using on-line and database techniques.

PROGRAMMERS should have a minimum of one year's COBOL or Assembler experience.

ANALYSTS should have a programming background and eighteen months' analysis experience.

PROJECT LEADERS should be capable of designing and controlling projects from feasibility to implementation.

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Ref: W1/0910/CW

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Ref: NW1/0910

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Our client, based in the City, is seeking to expand its programming team in order to cope with new development using on-line database techniques.

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Ref: E1/0910

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Ref. CW/48/80

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Telephone: Radlett (09276) 3077

## Australia

Emigrants to Victoria or New South Wales

Call us for direct contact with a leading consultancy in the Data Processing marketplace for all levels of staff in permanent career-orientated positions. We are primarily interested in Programmers, Analysts, Project Leaders/Managers, Customer Service Engineers, and Sales Personnel.

Modus will provide advice and offers personal administration of your introduction to a choice of jobs in Australia, commencing with an interview with one of our consultants. We can also advise on the logistics of moving to Australia.

### Customer Engineers with Univac Experience

Our Associate Company are keen to hear of any Field Service or Customer Engineers with experience on Univac systems or, alternatively, Honeywell. Interviews will be held in the U.K. as soon as possible.

## Programmers — Cobol or PL1 or Bal

CICS training available for high quality programming staff

Belgium salaries c. £18,000

Programmers and Analyst/Programmers with 3 years plus experience gained in an IBM environment are required to join a new development team being assembled to transform a straight 370/DDS site into a modern, DDP orientated 4300 DDS/VSE with CICS environment.

In our experience, companies rarely turn to the U.K. for staff whom they are willing to train, so this really is a unique opportunity. However, candidates must show a better than average awareness of computing in general as well as overall keenness and enthusiasm for their work. These are permanent job opportunities and therefore the willingness to live indefinitely in Belgium is of paramount importance.

## Analysts & Programmers

To join one of the most advanced installations in the country

S. Home Counties £7,500-£10,500

Our client is an extremely well known financial organisation, with a well publicised and highly successful growth record in the British finance world. The Company's d.p. function has grown from a fairly standard batch environment to a multi-machine (both mainframes and minis) site running both real-time, and on-line systems.

Modus is seeking a high quality of experience although the minimum acceptable is 3-4 years, ideally covering on-line systems design and implementation.

Company benefits are worth c. £2,000 on top of the salaries quoted above.

## Software Consultants

To design real-time and communications systems operating software

London, Beds. or Herts. to £11,000 + profits

Software specialists who can demonstrate a deep knowledge of real-time and/or communications software design, especially in conjunction with good experience of modern minis or micros, now have the opportunity to join a highly professional specialist software consultancy.

This company has successfully established a reputation in the USA and Europe for technical excellence and superiority and is striving to do the same in the U.K. Candidates should therefore possess a degree, be personable as individuals, and display a high level of intellectual ability.

Consultants: — Mike Cremer or Andy Wright

If the advertised positions do not match your experience or aspirations, Mike and Andy are always available for a confidential discussion of the possibilities. An informal meeting — often an essential part of the process — can be quickly arranged.

## Senior Technical Authors

Software or hardware dedicated — project orientated development systems

Bedfordshire from £7,500

New projects in this computer manufacturer require additional senior Technical Authors to work on the Software and Hardware documentation. The successful candidates will work in a brand-new office, congenial surroundings, and with all large company benefits (not the least of which is employment security).

Applicants must be thorough professionals. On the software side, a good knowledge of operating systems and at least one language; on the hardware side, the ability to read logic backed by sound computing experience. Preference will be given to all-rounders.

Modus also has vacancies in Italy for really good Software Technical Authors. Call us for a detailed discussion — wherever you wish to work.

## Programmers — Cobol or Basic

To work for a specialist commercial consultancy

London salaries £8,000 to £10,500

Programmers and analyst-programmers with a minimum of 3 years experience gained in a commercial environment are urgently required to join this expanding and extremely unusual systems house. Appointees will work on a range of minis and mainframes and be involved from the start in helping clients arrive at the best possible solutions to their business problems.

The company has an excellent track record of growth and expansion, and gives a high priority to ensuring that employees gain the maximum possible benefit from the continuing success, by awarding high salaries and participation in an extremely forward looking share scheme. On-going training and career development programmes are also in operation.

## Micro Software Development

Master-slave operating software, compilers, sort/merge utilities etc.

West Germany £17,000-£24,000

The German software industry is spending vast sums on some extremely advanced development projects at present, providing ideal opportunities for British software professionals to spend 2-3 years on the Continent and gain some excellent experience with which to return to the U.K.

Candidates must, however, have exactly the right experience in order to join the project teams — e.g. specific experience of sorts, compilers, or multi-station operating systems software. In addition, for the latter project, sound knowledge of a high-level language such as PASCAL or PLM (or any PL variant) is essential.

## Database Designers & Programmers

To work on database orientated distributed processing systems

Surrey salaries to £12,000 +

Our client is a well known and highly respected Bank with, therefore, tremendous resources and a long term commitment to advanced d.p. systems, the design and development of which has been commenced. This shortfall in the company's d.p. expertise is in the area of database design and vacancies exist at various levels from Programmers up to Project Leader positions. Candidates must have a track record in database design and/or implementation rather than simply d.b. systems exposure, whilst more junior applicants must have IMS experience. Superb benefits are offered, in line with most major banking opportunities.

## HOME or ABROAD

These are just five of the exciting opportunities with our clients that will suit you £10-£18K.

Plus generous tax-free overseas allowances

OP CONSULTANT, London or the North feasibility studies — D.P. strategy — minis/micros (CR 220)

SYSTEMS DESIGNER, London or Germany, real time systems, e.g. automation, medical, process control, (P.R. 204)

BUSINESS ANALYST, Pearson Gull, to implement system development standards and/or prepare specifications for users requirements. (CR 244)

RING NOW for details, quoting the consultants reference.

01.549 8441 (24-hr) (3074)

db executive (kingston) ltd

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## NATIONAL INSTITUTE FOR RESEARCH IN GRADUATE (UNIVERSITY OF READING)

### PROGRAMMER

A Programmer is required in the Statistics department to advise and assist users of a Prime mini-computer and other terminals online to a mainframe ICL System 4 Computer. Applicants should have experience of FORTRAN programming, and some knowledge of statistical analysis would be an advantage.

Qualifications: Degree or HNC in Computer Studies, Mathematics or Statistics.

Appointees will be as Scientific Officer (4.8/30 to £8,400 with starting salary according to qualifications and experience. Non-contributory superannuation.

Application forms are obtainable from the Secretary, N.I.R.G., Shinfield, Reading RG2 9AT. Quote reference 80/24. 12082

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## Research Machines

Computers for Science & Education

Research Machines is a leading UK manufacturer of small computers and computer networks for the scientific, engineering and education markets. We hold a strong market position and are expanding.

Excellent innovative design is a necessary part of our continuing success. Our Research and Development team secures our continuing position in the UK and we hope will also lead us to the forefront in Europe.

### R & D Management

We would like to bring mature management expertise and experience into our Research and Development team.

We are looking for two excellent people. A hardware manager and a

software manager to join a first class group. Their functions will be to plan and co-ordinate individual projects and to maintain project schedules day to day. They will provide day to day support for their engineers and programmers, contribute to long term strategy, and provide managerial support on technical matters to other departments.

You will be supported by working directors with technical expertise, and a company enjoying a good reputation. It presents an exciting opportunity to play a part in determining the future of a successful organisation.

We offer a competitive salary, a contribution to relocation expenses, four weeks paid annual holiday and free life and disability insurance. A contributory pension scheme and private health scheme are being introduced.

If you have had at least two years experience managing hardware or software development, please write in confidence for more details.

## Systems Hardware Designers. Systems Programmers/Analysts.

We design for the future. Here is chance to join a first class R & D team. Our primary aim is to produce top quality design in support of our current and future range of microcomputers. The environment is stimulating and you will enjoy working with excellent tools. The surroundings are pleasant and we are within walking distance of the centre of Oxford.

We offer a competitive salary, four weeks' paid annual holiday, free life and disability insurance. A contributory pension scheme and private health scheme are being introduced.

Please write to us in confidence with full details of your experience to date.

Correspondence to: Mrs. D.L. Fischer, Research Machines Ltd, Mill Street, Oxford, OX2 6BW.

FACILITIES MANAGEMENT BUSINESS SYSTEMS CONTRACT STAFF SUPPORT RECRUITMENT CONSULTANCY  
SOFTWARE PACKAGES COMPUTER SECURITY RECRUITMENT ADVERTISING FACILITIES MANAGEMENT  
CONTRACT STAFF SUPPORT RECRUITMENT CONSULTANCY BUSINESS SYSTEMS SOFTWARE PACKAGES

## HEXAGON

## CONTRACT DIVISION

### IBM COBOL CICS DL/1 AN/PROGRAMMERS

Initial 3-month contract for very experienced personnel with more than 8 years' DP background. DOS/VSE knowledge would be an added advantage.

### IBM MVS SYSTEMS PROGRAMMER

Knowledge of JESII, TSO and CICS also required for contract in London Area.

### PDP BASIC + PROGRAMMERS

A vacancy for personnel with more than 12 months' experience of BASIC+2. Knowledge of RSX11 also necessary.

### PRIME COBOL PROGRAMMERS & TEAM LEADERS

We are setting up several teams for 6-12-month projects in Central London.

### IBM COBOL+PLI+DOS PROGRAMMERS

Initial two-month maintenance contract in West London.

### IBM APL ANALYST/PROGRAMMER

We are looking for 2 experienced APL Analyst/Programmers for locations in London and the Home Counties. A commercial background is an added advantage.

### PDP CORAL 66 PROGRAMMERS

Two vacancies for CORAL 66 Programmers with minimum 12 months' experience for On-Line Data Entry System.

### IBM OS COBOL+CICS SENIOR PROGRAMMER

Six-month contract in London working on various on-line Engineering Products.

### VENTEK DATASHARE/DATABUS SENIOR PROG.

3-6-month contract in London for Stock Control project.

### IBM MARK IV PROGRAMMERS

It is unlikely that you will get a better paid contract in the London Area. Several years' experience essential.

Hexagon is currently expanding its Contract Division and would therefore be very happy to discuss these and other contract vacancies. If you are now seeking your next contract, or thinking of contracting as your next career move, why not call us for a "no obligation" chat? We are here until 8 p.m. most evenings. (0775)

**HEXAGON**  
computer services

Hexagon House 345 Windsor Street, London W1V 3TE

01-438-3671

### THE UNIVERSITY OF ASTON IN BIRMINGHAM

### COMPUTING SERVICE STAFF

The Computing Service is responsible for the provision of computing facilities to all departments of the University. A Harris 1000 system with terminal access for 40 users is due to be delivered later this year. This will supplement current facilities which include a Harris 1000, a Harris 1000, a Harris 1000 and a Harris 1000.

A vacancy exists in the Systems Group which is responsible for the development and maintenance of system facilities on the above equipment and for communications activities linking the ICL machine and later the Harris computer to a regional network.

A vacancy exists in the User Services Group to assist in the development and implementation of applications packages and the provision of documentation for users.

Candidates for either post should preferably hold a degree with a strong computing content and/or have significant computing experience. Salary on the scale Other Related 19 £4795-£8065 with initial salary according to qualifications and experience.

Further details and application form from Mr. A. G. Rice, Staffing Department, quoting reference Q/452/CW. The University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET. Tel: 021 359 3911 Ext. 847.

(4040)

### UNIVERSITY OF LONDON GOLDSMITH'S COLLEGE School of Science and Mathematics

### TECHNICIAN Grade 5

Applications are invited for the post of Technician Grade 5 in the Mathematics Department to maintain and supervise use of computer equipment and develop software for micro computer system. Knowledge of basic and assembly language programming essential.

Salary on scale 15 £555 - £716, increments of £162 per annum in 1981/82.

Write for further details to the Personnel Officer, University of London, Goldsmith's College, New Cross, London SE14 6NU. Closing date for applications 24th October 1980. (1320)

### SOFTWARE ENGINEERS / DESIGNERS £11,000+ HERTS / BEDS.

Our Client, a young and rapidly expanding software house currently require software designers in the scientific and technical fields.

The ideal candidates will have a degree in Computer Science coupled with a sound background with either Mini or Micro experience. Extensive knowledge of Assembler, Coral and RTL-2 is of paramount importance.

In return we can offer you an attractive benefits package together with an informal, flexible management structure.

### SENIOR SOFTWARE PROGRAMMER £9,000+ HERTFORDSHIRE

Our client, one of the world leaders in the field of manufacturing and supplying the Process Industries is currently seeking a Senior Software Standards Programmer to head up their new Software Standards Section.

The ideal candidate will have a degree or equivalent in a computing or engineering discipline together with around five years Software experience some of which shall have been gained in a Standards or Maintenance role. An in-depth knowledge of Assembler is highly desirable.

Age is immaterial to a candidate who can show leadership to a team of six as well as being able to give a professional image to visiting clients from both the UK and overseas.

To find out more about the excellent benefits packages please contact Colin Mason on (0727) 35113 or write to him at Blue Arrow Executive Selection, 2 Holywell Hill, St. Albans, Herts.

**Blue Arrow**  
Executive Selection

### OXFORD UNIVERSITY Robot Welding Project

An interdisciplinary research group located in the Department of Engineering Science is in the process of developing a robot welding system with special applications to the welding of thin sheet metal. The work will be in collaboration with British Leyland Technology Ltd and will involve an ongoing project in the University within the Control Engineering, Manufacturing Research and Image Analysis Groups. The project is funded by the SER as part of the new initiative in related fields.

Time now research posts will be the members of the group. They will involve a unique opportunity for young engineers to develop and make the technology of an existing robot held. The tasks are varied and will include an ASEA Robot 151 11/27 and the computer and access to a VAX 11/780 system.

#### 1. PROJECT ENGINEER

This post involves responsibility for the day-to-day running of the project. Knowledge of electromechanical systems, sensors, digital electronics or welding would be useful.

#### 2. TWO SOFTWARE ENGINEERS

One post is for a systems programmer who will also make available modern programming tools and micro computer links to the project. The other is for an applications programmer to develop micro-based software for control of torch position and weld parameters based on sensory feedback from the weld pool. Longer term aims include improvements in the teaching and automatic diagnosis of robots. These posts will require close collaboration with the Programming Research Control Engineering, and Image Analysis Groups.

The posts are initially for a 3 year period on incremental scales £5,605 to £9,595 (Grade 1A) or for exceptionally well-qualified candidates £8,845 to £11,575 (Grade II). The salaries are under review.

Applications, including a curriculum vitae and the names of three referees, should be forwarded to:

The Administrator  
Department of Engineering Science  
University of Oxford, Parks Road, Oxford OX1 3PJ (1011)

### Planning & Transportation Urban Traffic Control Centre Manager

£7287-£7722 p.a. (award pending)

Required to be responsible for the day to day management, maintenance and development of the Urban Traffic Control System and for the maintenance of all traffic control equipment in the County.

The system covers 400 traffic signal installations, 240 in the Greater Nottingham area being controlled by a Furman Dual 700G Computer System.

Applicants must be (or should preferably be) a degree in Electrical Engineering or other appropriate discipline with extensive experience in both computer software/hardware and staff supervision and deployment.

Relocation expenses where appropriate and a Casual Car allowance.

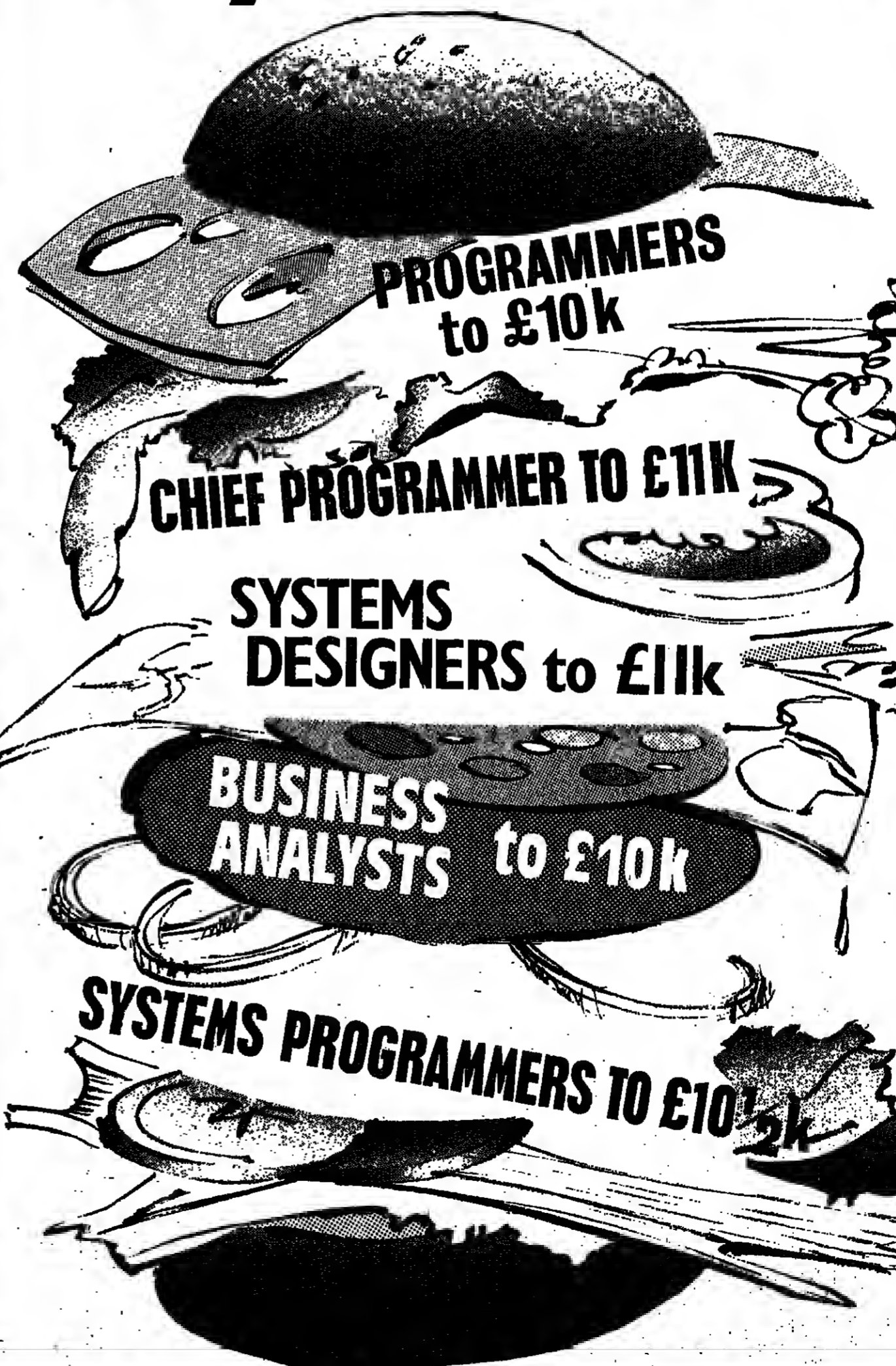
Apply soon terms and further details are available from the Department of Planning & Transportation, Trent Bridge House, Fox Road West, Nottingham NG2 6BJ. Tel: Nottingham (0533) 66555 ext. 316. Closing date 20th October 1980. Please quote ref: 14

**Nottinghamshire County Council**  
Nottingham

# MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

## Try this for size!



### DATA PROCESSING SPECIALISTS for Croydon

As the management and data services division of a multi-million pound group our client has world-wide responsibility for the data processing of an organisation who has led its field of commerce for over a century.

Currently using IBM 370's running under DOS/VS and VM, controlling a network which extends to Europe the installation is to upgrade its equipment to the latest IBM 4300 range. As an established user of CICS and Database techniques they will be consolidating their lead and introducing IBM 8100 technology to control the interface between word processing and data processing.

Productivity aids have been carefully evaluated resulting in the use of APL and on-line program development and an increase in the rate of system development.

To maintain their high level of service to the group additional data processing specialists are needed who will be given the opportunity to develop their skills whilst meeting user objectives.

**RELISH:** paid overtime, L.V.'s, free life assurance, pension and health scheme, sports and social facilities, six monthly reviews and generous holidays.

Telephone Diane Williamson on 01-637 9611 for more details

**MANAGEMENT & EXECUTIVE SELECTION**

Suite 201/6 Albany House 324 Regent Street London W1R 5AA 01-637 9611

### ANALYST/PROGRAMMERS Nottinghamshire

**c.£7,000**  
**3 YRS. EXPERIENCE**  
A rapidly expanding computer division servicing a major commercial conglomerate requires Analyst/Programmers to join their progressive team developing new commercial systems for on-line applications. Current proposals include upgrading of new ICL 2900 series equipment running ultimately under the latest operating systems.  
Successful candidates will ideally have 3 years' COBOL programming experience prior to development into analysis and should be prepared to work on their own initiative and have confidence to be involved in direct user contact.  
The Company, which is situated in rural Nottinghamshire, offers usual fringe benefits coupled with genuine opportunities for promotion.  
**Contact: Roger Carr** **Hegley 885136 (Evenings)**

### PROGRAMMERS Birmingham

**To £8,500**  
Our Client, a leading major manufacturer, currently using the latest IBM hardware, is looking for Programmers with at least 3 years' COBOL experience. Work currently being undertaken is On-Line Real Time development. A knowledge of CICS/DLI would be an advantage, but is not essential.  
Opportunities to progress within the Organisation exist for the right applicants.  
**Ref. 5/664**  
**Contact: Christine Pountney**

### ANALYST/PROGRAMMERS Birmingham

**To £7,500**  
Programmers who have 2 years' plus COBOL experience and are looking for a move into Analysis would be ideal applicants for those positions. Our Client is looking for people who can work on their own, under pressure and be involved in a changeover of hardware to the latest IBM mainframes.  
Financial and/or commercial applications experience would be preferable.  
**Ref. 5/659**  
**Contact: Christine Pountney**

## Blackwood Associates Recruitment Consultants

26 Waterloo Street, Birmingham B2 5TJ.  
Telephone: 021-233 2921 (24 hr. service)

A Member of the CPS Group of Companies.

### ANALYST/PROGRAMMERS Bristol

**Up to £8,000**  
An established systems house within the Bristol area, is seeking a number of candidates with experience of Basic+ on DEC PDP11 equipment to join its expanding software department. Vacancies exist for both analyst/programmers and customer support staff who have at least two years' experience in a commercial environment.  
**Ref. W297**  
**Contact: Hazel Fogglin**

### PROGRAMMERS Wilts

**C. £7,000**  
A programmer with at least 2 years' experience of Assembly programming on IBM equipment is required by a client company in Wiltshire. The successful candidate will become involved in both commercial application programming and occasional systems programming. Relocation assistance will be given where necessary.  
**Ref. W288**  
**Contact: Hazel Fogglin**

### PROGRAMMING PROJECT LEADER S. Staffs

**To £8,000**  
An experienced and mature programmer is required, capable of dealing with users and management at all levels, to handle the development and implementation of a range of batch and real-time application both manufacturing and commercial. The position offers an excellent opportunity to develop and control a team of programmers in a well-organised and progressive company installing the latest hardware.  
**Ref. B959**  
**Contact: Peter Bowen**

### SYSTEMS ANALYST Wolverhampton

**To £8,000**  
Our client requires a business systems analyst who has a COBOL programming background to develop a range of systems on new hardware. Database and On-Line manufacturing systems are the first objectives in this challenging position.  
**Ref. B932**  
**Contact: Peter Bowen**

INTERVIEWS ANY TIME BETWEEN  
9 a.m.-5.30 p.m. EVENINGS AND  
WEEKENDS BY APPOINTMENT  
WRITE - BLACKWOOD ASSOCIATES,  
FREEPOST, BIRMINGHAM B2 4BR

# Mini Computer Engineers

## MIDDLE EAST

A rare opportunity has arisen for an experienced Engineer to join a very specialised systems house, who market their software as a total solution along with a major US minicomputer system. The successful applicant will transfer to this US company on their setting-up their branch office in Bahrain. The successful applicant will be a professional minicomputer engineer with some 3-5 years' experience, who will see this very much as a long-term career opportunity though not necessarily permanently in the Middle East. An excellent tax-free salary, company car, education grant and free accommodation in this most Westernised of the Middle Eastern states will be provided.

FOR A GENERAL DISCUSSION ON THIS EXCITING AND HIGHLY RESPONSIBLE POSITION WITH ONE OF THE WORLD'S LARGEST MINICOMPUTER COMPANIES TELEPHONE DOUG SNEDDON IN OUR LONDON OFFICE, QUOTING REF: DS21.

INSIGHT

INSIGHT LONDON

COMPUTER AND PROFESSIONAL RECRUITMENT CONSULTANTS

INSIGHT MARKETING & PERSONNEL CONSULTANTS LIMITED  
London - 72-75 Marylebone High Street, London W1M 4AJ.  
Tel: 01-486 5644  
North - Austin House, Charlotte Street, Manchester 1.  
Tel: 061-236 7026  
International - Wolden House, 32-33 Marylebone High Street, London W1M 3PE. Tel: 01-486 7938  
Ireland - 20 Upper Fitzwilliam Street, Dublin 2. Tel: 0001 766387

Recruitment



in Informatics

## Microprocessor Engineers

Switzerland: Salaries to £16K

Our clients' Headquarters are located near Zurich. We are retained to recruit top calibre Microprocessor Software Development Engineers to join the company's permanent staff. Emphasis will be placed on technical achievement and in-depth experience in the areas of assembly and/or C programming. A Bachelor or Masters Degree in Electronics, Electrical Engineering, Physics or Computer Science is a mandatory requirement. All candidates must offer four years' microprocessor software development expertise gained with a Manufacturer or High Technology Software Supplier. There is a preference for those fully familiar with Motorola 6800 or Intel 8085/8. German language course may be arranged but it is valuable in offer at least minimal language ability. Every assistance will be given in relocation including the provision of temporary hotel or rented accommodation.  
**Ref: L/41/A**

## Mini Software Development

Beds./Cambs: Salary to £10K

Our client is a highly respected Systems and Software Supplier having its Research and Development Facility in a most attractive East Anglian location. Current requirements are for Development Programmers offering a minimum of 18 months Basic or Assembly programming experience on any mini-computer or micro-processor. These positions will appeal equally to those with a scientific/academic computing background or commercially inclined Programmers. Offering a comprehensive range of in-house hardware, unrivalled development aids are available for ambitious, enterprising individuals. The salary and excellent ancillary benefits represent an outstanding opportunity for those keen to participate in "state-of-the-art" software and hardware projects. Interviews can be arranged both locally and in London.  
**Ref: L/41/B**

## Commercial Systems

Benelux: Salary to £15K

One of Britain's most successful, commercially orientated Systems and Software houses urgently requires Analyst/Programmers and Analysts for its Benelux operations. This is not a temporary position. The successful candidate will have exposure to any particular hardware. The Company does have a stated preference for candidates with experience of O.E.C.'s P.O.P. range and medium to large I.B.M. mainframes. Knowledge of the techniques associated with distributed processing is an advantage. Successful applicants will be required to have played a leading role in a project team developing and implementing at least one major on-line system in the banking, retail or manufacturing sector. As considerable client liaison is a feature of all positions, a reasonable command of French and/or Dutch is highly desirable.  
**Ref: L/41/C**

## Pascal & ADA

Rural Oxfordshire: Salary to £11K

PASCAL & ADA will have a great future. If you want to participate in the realisation of their potential, please read on... Our client, an expanding Software/Systems Supplier is based on the edge of the Chilterns in an area of outstanding natural beauty. Current requirements are for Program Engineers and Designers who can offer a combination of academic achievement and practical exposure to both software and hardware orientated projects. Suitable candidates should have a real and demonstrable interest in PASCAL compiler development or have participated as a team member in the evaluation of ADA and similar hybrid languages. Interviews will be held in mid-October and offers seven days thereafter.  
**Ref: L/41/D**

## CICS Programmers

Holland/Germany: Salary to £18K

A multinational organisation with offices throughout Europe and the USA has an urgent requirement for four Applications Programmers to work in their IBM 3033 and 43XX installations in Holland and Germany. Suitable candidates should have developed and maintained an on-line, real-time system using CICS with DLI. However, those applicants with relevant experience using any other IBM compatible TP monitor should not be deterred from applying as training will be given. These positions represent an outstanding opportunity for career-minded individuals to enhance their technical skills whilst at the same time enjoying the diverse cultural benefits of another society.  
**Ref: L/41/E**

## Micro Business Systems

W. Home Counties: Salary to £10K

A leading supplier of micro-based business systems urgently requires Programmers to both develop applications packages and assist with their installation on customer site. Fluency in Basic or Assembly is essential and will preferably have been gained on any leading mini or micro-computer. Applicants who are, additionally, able to demonstrate a knowledge of Pascal will be especially welcome. The company offers outstanding career opportunities in a rapidly expanding market sector and, by virtue of its extensive client base, exposure to a wide variety of applications.  
**Ref: L/41/F**

## Software Trainers

Hampshire Coast: Salary to £10.5K

A leading manufacturer of mini-computers for both scientific and technical applications seeks several Software Trainers and Lecturers for its recently established Hampshire office. Work content will include the staff training of both existing and prospective customers in O.P. techniques and the Company's Software products. Education takes the form of product demonstrations, seminars, workshops and of course "on-the-job" tuition. The development of software courses in areas not so far covered by the Company will form an essential and integral part of the post. Our client prefers candidates who have previous programming experience in either BASIC or ASSEMBLY. Previous lecturing or training experience is an obvious asset.  
**Ref: L/41/G**

Logistix, 10 Grenville Place London SW7 4RW

01-373 3063



Telex: 28800

(3037)

## PROJECT LEADERS AND SYSTEMS ANALYSTS

Does a bright, fruitful future fit into your programme?

South Africa is gold country. We're in the middle of a boom period - which looks like going strong for some time to come - and consequently we're maintaining our reputation as a country filled with opportunity. It's a land of low taxation, an incredibly high standard of living and equally low cost of living. Interested? Keep going...  
Just south of Durban, the Riviera of South Africa, lies the sophisticated Motor Assemblies plant, where Thyolas, Renaults and Alfas are manufactured. We're expanding, and we need your expertise and experience to help us meet our projected future - and advance beyond it.  
The people we are looking for must have at least 4 years' D.P. experience and a knowledge of COBOL. A background of Burroughs computers and the RJE operation would be an advantage.  
We're prepared to offer generous relocation assistance in your move to our country: assisted passage, a one month salary grant, one month's accommodation in a hotel whilst you've found your feet. In addition, you'll receive a very attractive salary, annual bonus, excellent pension, medical aid and insurance schemes and leave car facilities. Oh yes... if you wish to view the UK and SA, we'll supply a free round-trip air ticket.  
Please write, enclosing full career details, to: CHRIS MORZE, Lindsay Smith Recruitment, 62 Baker Street, London W1M 1DL.



Motor Assemblies  
Limited

PLYMOUTH  
POLYTECHNIC  
Faculty of Technology

Department of  
Mathematics, Statistics &  
Computing

LECTURER II/  
SENIOR LECTURER  
in Computing/Information  
Science

Applications are invited for the above post which is newly created in support of the department's developing teaching and research interests. In the application of computer technology to the processing of information.

Salary:  
SENIOR LECTURER  
£8002-£11,295  
LECTURER II £8012-  
£9702  
Application forms, to be returned by Friday, 31st October, 1980, can be obtained with further particulars from the Personnel Officer, Plymouth Polytechnic Drake Circus, Plymouth PL4 8AA.

UNIST  
University of Wales

THE WELSH SCHOOL OF  
ARCHITECTURE  
RESEARCH  
ASSISTANT

to work on the further development and implementation of a time difference thermal model for predicting the energy efficiency of buildings; candidates with experience in computer science or electronics preferred.  
Salary: Range 18,24-786-£0,986.  
Requests quoting Ref. CWJ for details and application form to Personnel Section (Academic) UNIST, Cardiff CF1 3NU.  
Closing date: 31st October, 1980.

## Targa SENIOR RECRUITMENT CONSULTANT

£12,000 + CAR

Targa Computer Services, which was established in late 1978, is part of a Recruitment group of companies. We are currently looking for 2 Senior Recruitment Consultants to expand and develop further the recruitment services for the Senior appointments of the computing industry.

Ideally you should be over 25 with at least 3 years' computer experience, to include either Systems Analysis or Programming knowledge. You should have the ability to advise clients on salary levels; job identification and specification; and advertising, thereby compiling a client profile for suitable applicants. Additionally, you must be able to assess people and to advise them on their career development.

We offer a substantial benefits package including a basic salary up to £5000 plus an excellent commission structure, which is guaranteed for the first 3 months. There are also two incentive bonus schemes plus a company car after 6 months.

Please contact M. Deuncey on 01-439 6749 or alternatively send him your detailed CV.

TARGA COMPUTER SERVICES  
46/47 LONDON WALL, LONDON EC2M 5TE

# REAL TIME SYSTEMS—DEC BASED

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For this crucial appointment you will need extensive software systems experience on DEC equipment using CORAL or MACRO II together with project control experience including the meeting of deadlines and the controlling of costs. You will have responsibility for about twenty-five software professionals and thus you need to be a good motivator and team manager. Your applications background could be in industrial process control, simulation or defence systems.

Reporting to the Software Manager you will lead a small team of about four software engineers. You should be a numerate graduate with experience in developing real-time software systems, preferably in MACRO II or CORAL on PDP 11s (RSX11M) in application areas such as industrial process control, simulation, defence systems or similar. It should particularly appeal to you if you feel ready to extend your technical background into a leadership role.

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For further information, please contact MARK TRENS quoting reference CW/0910/4.

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**CONTACT: BOB BOWER,**  
**ADVISING DIRECTOR.**

Ref. CW 0910/1

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The London office of an international bank will shortly be upgrading from a Burroughs L9000 to an HP3000. This has created an opening for a Programmer/Analyst to contribute creatively to the modifying of existing systems and the designing of new systems. The responsibility is considerable and thus we are looking for a person with initiative, a professional approach and ability to work largely unsupervised. The main requirement is at least three years' RPGII programming experience, preferably gained in a banking environment. Knowledge of COBOL would be useful but is not essential.

**CONTACT: MARK IRENS, ADVISING DIRECTOR.**

Ref. CW 0910/2

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KNOWLEDGE OF GPO DATEL SERVICES.  
MANAGEMENT EXPERIENCE OR POTENTIAL.

An excellent and rare opportunity has evolved at our Clients, a well-known and respected mini-computer and word processing systems manufacturer. They urgently require a sound communications software expert to take control of customers' teleprocessing requirements and to help modify existing communication packages. The position has enormous potential and management is a natural and imminent progression.

**CONTACT BOB BOWER, ADVISING DIRECTOR**

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Experience must include systems programming, OS/VS1 and IBM Assembler. In addition VM and PL/1 would be advantageous.

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Experience of Sysgen and of working in an operating systems environment.

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**IBM 4341**

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## The Lockheed glossary of DP terminology

**User Friendly (u.f.)** A good way to describe Lockheed's brand new, air-conditioned DP Centre in Riyadh, Saudi Arabia.

**Timeslice (u.s.)** A two-year assignment with Lockheed.

**Checksum (n.)** A substantial configuration of digits payable monthly (with six monthly bonuses) during a timeslice (q.v.).

**Access (u.s.e.r.)** Strictly limited to experienced Programmer/Analysts.

**Password (n.)** Typical passwords include COBOL, DOS/VS, CICS and POWER. Access is dependent on programmer/analyst possessing the right passwords.

**Peripherals (n.all.)** Closely and functionally related to checksum. Currently, peripherals include free food and laundry, free medical and life insurance.

**Mainframe (n.)** LEC Series 3 System, updating, now to IBM 4331.

**Downtime (n.)** Six downtime periods occur in every timeslice. During downtimes, Programmer/Analysts usually return to the UK, and receive free return flights.

**Suite (n.all.)** Usually applied to an Analyst/Programmer's bachelor accommodation (viz peripherals).

**Address, real (n.)** The Senior Recruitment Exec. (Lockheed), IAL, Personnel Consultancy, Acadia House, Hayes Road, Southall, Middlesex. Quote numeric L294.

**Conversational mode (n.)** An alternative to address, real. The mode may be entered by phoning 01-574 5000.



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This post is in a team responsible for Urban Traffic Control software and for a range of main frame non-financial applications. The work is a mixture of analysis, programming (Fortran 77 and assembler) and user support. Hardware used includes a large Univac 1100/11, Honeywell mini computers, terminals, digitiser and digital plotter. Relocation expenses up to £1,650 plus lodging allowance in appropriate circumstances. Temporary housing may be available.

Application forms and further details available from the Director of Planning and Transportation, County Hall, Glenfield, Leicester LE3 8RJ. Telephone Leicester (0533) 871913, Ext. 7422.  
Closing date: Monday, 27th October, 1980.

<b>H 66 HOLLAND</b> 2+ years' Fortran on Honeywell Level 66 equipment (preferably under GCOS) urgently needed by London-based Systems House for important, long-term project in Holland. Relocation offered. Initial interview in London. c £17K	<b>PDP 11 BASIC</b> Programmer/Analyst with 2+ years' experience in BASIC required by leading Financial Institution for newly-acquired DEC-based system. Must be self-starter, prepared to work at City and N.E. London offices (possible relocation assistance). c £8K+ Mortgage	<b>REAL-TIME MINIS</b> Programmers, Analysts, System Designers required by UK Software House for numerous real-time projects on minis currently being undertaken in the UK and Holland. Applications chiefly technical/scientific. £ neg.
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<b>MICROS BERKS.</b> Senior Engineers with 3+ years' micro experience preferably with Electrical/Electronic Engineering degree, wanted for design and development work with UK subsidiary of Micro manufacturer. Of special interest are experience in firmware development and digital and analogue circuit design. c £10K	<b>SYSTEMS PROGRAMMER</b> 1-2 years' Systems Software in Assembler on Minis plus ORAI for design, development and providing technical support to Dutch client of Herts-based Mini manufacturer. Degree preferred, ability to work alone effectively essential. Travel to Holland required. c £8K
---	--

## Mini & Micro

### Holland: Real-Time Systems

An International Systems/Manufacturing Group in Holland is seeking to expand its capabilities by recruiting additional personnel experienced in the mini/micro field. The Company is well established and has a high reputation in the scientific/technical application areas.

The requirement is for Programmers, Analysts, Designers and Consultants. Necessary qualifications for these technically demanding and challenging positions are a background in Mini Assembler or Micro Systems (minimum 2 years) in a non-commercial environment. A relevant degree (e.g. Computer Science, Elec. Engineering or similar) is preferred, although experience in lieu will be taken into account.

Specialist knowledge in any of the following is of particular interest: Message Switching, Process Control, Simulation, Networks, Communications, Banking Systems.

Generous family relocation packages offered plus resettlement advance, 8% holiday bonus, comprehensive medical and pension schemes and house purchase assistance.

**Salaries £10-18K**

<b>MINIS MIDDX</b> Analyst/Programmer and Project Leader wanted for Development Division of leading Mini manufacturer. Assembler and at least one high level language required, knowledge of interface and Emulators desirable. Excellent long-term opportunities. to £11K	<b>CAD S/W ENG</b> Software Engineers and Designers with experience of technical and CAD software on DEC, Prime or similar equipment required for development work on CAD projects with this East Anglian client. Knowledge of Fortran and Assembler preferred. c £8.5K	<b>DB/DC EUROPE</b> Analyst/Programmer and Designers, with in-depth experience of IMS, DL/I, TOTAL, CICS or similar DB/DC experience (technical not managerial) urgently sought. European offices of International Systems House for development work. to £16K
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<b>IBM ASSEMBLER</b> Systems Programmers with 4+ years' experience in BAL and acquaintance with compiler writing, plus MVS, VS1 or VS2 wanted by advanced Computer manufacturer with UK base in Middles. IMS or other specialist knowledge will be highly rewarded. Relocation where appropriate, overseas opportunities likely to arise. £9-12K	<b>CORAL RTL 2</b> Programmers and Programmer/Analysts who have real-time experience gained in a defence, telecomms, or industrial environment required by Systems House. Machine knowledge to include PDP11 (under RSX-11M), GEC 4000 or Minis. Offices are in North Hampshire, occasional trips to German subsidiary may be required. £6-10K
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## SOFTWARE ENGINEERS / DESIGNERS

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Our Client, a young and rapidly expanding software house currently require software designers in the scientific and technical fields.

The ideal candidates will have a degree in Computer Science coupled with a sound background with either Mini or Micro experience. Extensive knowledge of Assembler, Coral and RTL2 is of paramount importance.

In return we can offer you an attractive benefits package together with an informal, flexible management structure.

## SENIOR SOFTWARE PROGRAMMER

£9,000+ HERTFORDSHIRE

Our client, one of the world leaders in the field of manufacturing and supplying the Process Industries is currently seeking a Senior Software Standards Programmer to head up their new Software Standards Section.

The ideal candidate will have a degree or equivalent in a computing or engineering discipline together with around five years Software experience some of which shall have been gained in a Standards or Maintenance role. An in-depth knowledge of Assembler is highly desirable.

Age is immaterial to a candidate who can show leadership to a team of six as well as being able to give a professional image to visiting clients from both the UK and overseas.

To find out more about the excellent benefits packages please contact Colin Maslen on (0727) 35113 or write to him at: Blue Arrow Executive Selection, 2 Hylwell Hill, St. Albans, Herts.

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Executive Selection

## SYSTEMS PROGRAMMER

(£3408-£3381 Pay Award Pending)

DEC large and small systems (2050/ PDP11/40)

A recently created post in the systems team of the Polytechnic offers opportunities in the support of online teaching and graphics systems. Candidates should have a large knowledge of assembly language techniques and at least one high-level language.

Facilities include terminals at each desk and modern computing equipment. Opportunities exist for staff to work for higher degree and professional qualifications.

Nottingham offers reasonable housing costs — a 3 bedroom semi-detached house for approximately £15,000. Some assistance with removal costs may be given.

Further details and form of application from Assistant Director (Administration), Trent Polytechnic, Burton Street, Nottingham NG1 4BU. Closing date: 20th October, 1980.

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Consultants, analysts, applications and Systems programmers and a JCL specialist are required for ten diff. projects. Large IBM exp. with one or more of the following is essential: PL1, COBOL, MARK IV DLI, IMS DB DC, PLO, ACF, JCL.

For further details please contact Roger Allington, quoting FL28

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## REAL-TIME SOFTWARE DESIGN

London Up to £12,000

Our client is an established supplier of quality real-time and other computer bureau services to several blue chip organisations.

They are a technically adventurous organisation, having designed their own database and real-time systems. This has meant that they have a much more interesting technical section than is usual in a commercial environment. The result is an opportunity for graduates to be involved with real-time systems, database and data communications software.

A major enhancement of the twin CPU's together with a significant expansion of the intelligent terminal network will give further opportunity for the group (of four people) to develop their skills and give full job satisfaction.

If you have substantial system software experience (perhaps five years or more) and are seeking a technical challenge in a company that provides significant benefits in addition to salary, and has offices in an interesting part of Central London close to tubes and with easy access to mainline stations, then ring us, in confidence, quoting reference 315. (Messages will be recorded after hours.)

**EDP SYSTEMS** 01.637 52-53 Margaret St. London W1N 7FF 5796

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EMPLOYS OVER 650 PEOPLE AT 10 LOCATIONS.

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Ref. SR5018

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## Microelectronics in Education Programme

Applications are invited for two posts on the small management team being established to run the Government's Microelectronics in Education Programme, which will consist of a range of coordinated projects commissioned through national bodies, local organisations and individual schools and colleges. Both appointments will be for a fixed term, ending on 31 March 1984. Successful candidates will be based in Newcastle upon Tyne.

### MANAGER (COMPUTING)

To have particular responsibility for projects dealing with:

- the development of software
- the development of computer-based learning materials
- computer application in schools

The Team will look at the Manager (Computing) for technical advice on computing. A requirement of the post will be to visit projects throughout England, Wales and Northern Ireland.

Applicants will need both educational and computing experience. Salary on a scale from £7360 to £9068 (Administrative Officer).

### MANAGER (TECHNOLOGY)

To have particular responsibility for projects dealing with:

- the teaching of electronics, control technology and associated topics
- the development of teaching materials dealing with the technology of microelectronics

The Team will also look to the Manager (Technology) for technical advice on microelectronics. A requirement of the post will be to visit projects throughout England, Wales and Northern Ireland.

Applicants will need both educational and technical experience. Salary on a scale from £10410 to £17150 (Administrative Assistant).

Applicants for both posts may ask for assistance with removal expenses.

Closing date for applications: 31 October, 1980.

Fuller details for both posts are available from:

The Office Manager, Council for Educational Technology, 3 Devonshire Street, London W1N 2BA.

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To £20,000 PL/1 London

Programmer with about 2 years PL/1 experience in a commercial environment. IBM hardware.

To £10,000 COBOL Programmer

COBOL Programmer with about 2 years experience in a commercial environment. Good prospects and opportunity for career growth. Reasonable package. Applications to be sent to: **COMPUTER SYSTEMS & PERSONNEL**

100 Parkway Road, London NW9

12470

## Excellent Contract Opportunities

The following are a selection of our current contract assignments. However, we have a continuous requirement for skills and dedicated contract professionals, so please make sure you are on our Register.

MARK IV	ANALYSTS/PROGRAMMERS	USA/PARIS/GERMANY
UNIVAC 1100/ DMS & TIP	DATABASE DESIGNER	N. WEST
BANKING	ANALYSTS	CENTRAL LONDON
HP 3000	ANALYST/PROGRAMMERS	LONDON
4300 SERIES	SYSTEMS PROGRAMMER	S. LONDON
UNIVAC	ANALYST/PROGRAMMERS	ESSEX
COBOL/CICS and/or DLI EXPERIENCE	ANALYSTS DESIGNERS AND PROGRAMMERS	N. WEST
REDIFON R860	SENIOR PROGRAMMERS	LONDON
IBM/ICL 2900 COBOL	PROGRAMMERS	NIGERIA
COBOL/DOO	ANALYST/PROGRAMMERS	GERMANY
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For more information telephone  
**Alan King**  
Tangent Computer Service  
102/106 South Street  
Romford, Essex.  
Tel. Romford 750201

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- \* Computer Graphics
- \* Economic Evaluation
- \* Project Information
- \* Engineering and Metallurgical Design

## PROGRAMMER/ SENIOR PROGRAMMER (FORTRAN)

London

Seltrust Engineering Limited, a wholly-owned subsidiary of the British mining house, Seltrust Trust Limited, provides mining, metallurgical and engineering design and consulting services on a worldwide basis. As part of the support for these services the company has developed the ORPHEUS mine design system which is now commercially available through the satellite-based GEISCO Mark III/GCOS network.

We seek a Programmer/Senior Programmer to join the small professional team which is responsible for programming and all related activities concerned with the support and further development of the ORPHEUS system. The successful candidate will work closely with users and opportunities for short overseas visits may arise.

Applicants should have at least 2 years' FORTRAN experience, preferably in an industrial environment. Previous experience with graphics, mini-computers or the mining industry would be an advantage.

The Computing Department is located at our London head office and its work reflects the wide spectrum of the company's activities. A PDP 11/34 computer and remote batch terminal are used to communicate with a number of bureau services.

We offer an attractive salary supported by excellent working conditions and benefits. For an application form, please contact:

**SELTRUST ENGINEERING LIMITED**  
Mary Powell, Personnel Officer,  
Seltrust Engineering Limited,  
Fleet House,  
57/59 Clerkenwell Road,  
London EC1M 5SP.  
Tel: 01-250 0011.

## JBA

## DEC Sales Executives

Saudi Arabia c. \$20,000 package Tax free + car + accom.

We have been retained by a large commercial organisation, who are the distributors for DEC systems in Saudi Arabia, to recruit Sales Executives to work from their Jeddah offices.

Applicants should have at least five years experience on Digital equipment together with a proven sales record, preferably in technical, government or industrial markets. Management abilities (or potential) could assist in the Company's development. A knowledge of Arabic would obviously be an advantage.

Contact: Jim Baker

## MIDDLE EAST Project Leaders and Systems Programmers

c. \$15,000 Tax Free + Accom.

One of the leading Consultancies in the Gulf area wish to strengthen several of their teams covering diverse application areas. Commercial Project Leaders with very strong IBM 370 and COBOL backgrounds are required. You will have a good design record and possibly exposure to CICS and on-line applications.

Systems Programmers with at least 2 years CICS experience plus in depth knowledge of the OS operating system are required to support and maintain client sites. Applicants with bachelor status preferred, but those with no more than two children will be equally considered.

Contact: Brian Postles

## Sales Consultants

All areas \$15k+ package plus car

A well established supplier of small business systems is about to launch a new proven product onto the U.K. market and now requires Sales Consultants to take responsibility for various territories in this country.

Candidates must have a proven sales record preferably in the small turnkey commercial market and be capable of undertaking d.p. studies for prospective customers.

Contact: David Hendry

## Systems Analyst

France/London \$10,000 +

The International manufacturing organisation is seeking an experienced person to join their team at a senior level, and assist with the installation of IBM System 34's. Systems have already been installed in London and Paris, with plans for further development on the continent. Although the base is London, it is expected that approximately 75% of the work will take place in Europe, therefore, a good command of German and/or French is essential.

The appointee will be expected to have at least three years in an IBM environment encompassing small systems, RPG II and the development of commercial civil manufacturing applications.

Good opportunities exist within the company for career advancement, and naturally all expenses incurred whilst travelling will be covered.

Contact: Janet Chivers

## System Software Designers

Sussex to \$9,500

This is an exceptional opportunity to join the Software Development team of a British-owned mini computer manufacturer who are already market leaders in the UK, East/West Europe and Middle East. Their plans to market in the Far East are well underway.

System software specialists are required to assist with the on-going development of new software products.

Successful candidates will have extensive Assembler programming experience which should have been applied in the areas of transaction processing, compilers, operating systems or communications using mini computers.

Training is offered to IBM systems programmers who wish to make the transition from main frames to minis.

In addition to the excellent prospects available for ambitious people, the company offers a substantial benefits package including full assistance with relocation.

Contact: Margaret Stevens

## Analyst/Programmer

London up to \$9,500

A rapidly expanding oil exploration and production company with interests in the North Sea, are about to install a PRIME 250 computer and they require an Analyst/Programmer with relevant experience to assume responsibility for some of the work.

The initial development work will include accounting and financial modelling although this will go on to economic modelling, seismic data analysis and mapping, oil well information and log analysis.

Ideally, applicants will be graduates although this is not essential. They must have good knowledge of FORTRAN and/or BASIC with solid experience in business or technical information systems. Knowledge of PRIME hardware and software would, of course, be advantageous.

Contact: David Hendry

## Technical Programmers

City \$9,000 + Benefits

Our client, a well established world wide organisation, which is primarily involved in shipping, but has many other diverse interests within the petro-chemical industry, wishes to recruit experienced FORTRAN Programmers to work within the areas of numerical analysis, computer-aided design and interactive graphics.

Candidates must have a good degree in Computing Science, Mathematics, Engineering or other scientific subjects and should have a minimum of two years post-graduate scientific programming preferably on IBM or Hewlett-Packard hardware. Some structural or hydro dynamic application experience would be useful.

Excellent opportunity to progress in an interesting and professional environment.

Contact: Isabel Bruce

## Analyst/Programmer

London \$ commensurate with experience

This is an excellent opportunity to join a well established company, which is in the process of installing two PDP11/70's, and be involved in the development of unusual financial systems, concerned with the commodity world.

Ideal experience would be two years in a PDP environment using Basic+, with involvement in the development or enhancement of one major system.

The company plans are extensive in various areas including a data communications link with European offices, plus an on-line system into one of London's largest trading markets, therefore, they can offer good career prospects coupled with a generous salary, annual bonus and other usual fringe benefits.

Contact: Janet Chivers

**JAMES BAKER ASSOCIATES, International Personnel Consultants, 32 Savile Row, London W1. Tel: 01-439 8311.**

# ... CONTRACTS ... CONTRACTS ... CONTRACTS ...

## What do contract staff think?

by Chris Lancashire

A RECENT privately-commissioned survey\* took a new approach to assessing the attitudes, aspirations and opinions of freelance life in the IT field - it asked continuous questions of the contract programmers themselves.

The answers shed quite a bit of light on the delicate relationship balance of dependence, respect and professionalism which evolves between the three parties - the client, the consultancy and the programmer.

And on the negative side, they reveal some widespread gripes which users and employers of contract staff ignore at their peril. Most important of all, however, is the number of widely-held myths which are exploded by the survey results.

Myth No. 1: contract staff are happy-go-lucky, young, single, here-today-gone-tomorrow.

Wrong. The majority are aged 24 to 32, married, have over five years' permanent programming experience and have been contracting for 18 months. More telling still, the majority plan to continue living on their professional reputation doing contract work for the next three to five years.

Myth No. 2: in sites where contract staff are retained, relationships with permanent employees engaged in similar work tend to be strained and cause day-to-day problems.

Wrong. Fewer than one in five of the contract programmers surveyed had experienced such problems.

Myth No. 3: people go on contract for the money.

Right. But not only. Rated almost equally with the financial attractions are a variety of people, places and technical experience, independence and job satisfaction.

In fact, a strong impression emerges from the survey of the concerned and responsible attitudes which freelancers take towards their work and the client sites at which they are temporary visitors.

This extends in some constructive criticism of the way some clients make use of their capabilities. For example, over half the sample consider that they are employed beneath their personal competence level.

The detailed briefing makes even more sense in view of the 75% who claim that client documentation is not adequate, although essential to their rapid productivity.

The other solution to the problem of "overqualified" contract staff lies in the hands of their contract consultancies.

That is not to say they misjudge the talents of their contractors, for over 90% of the sample believe that the agency they deal with has a clear understanding of their "marketable" qualities. Note the word marketable: the most marketable quality of a highly-gifted specialist in assembler interrupt routines may be his sideline knowledge of Cobol.

The agency can help by making sure it is in contact with the client's interest to speed more time in initial briefing at the start of the assignment so the role to be performed by the freelancer can be put into its broad context and his particular strengths in related projects highlighted.

Many contractors consider it would be in the client's interest to speed more time in initial briefing at the start of the assignment so the role to be performed by the freelancer can be put into its broad context and his particular strengths in related projects highlighted.

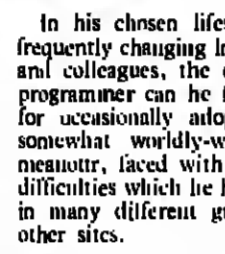


There are many myths surrounding contract staff. In a recent survey conducted by the VLI group of contract staff, many of these myths were exploded.

The idea that all contract staff are only highly paid job-hoppers was dismissed and most of the staff who replied made it quite clear that they are interested in doing contract work for the next five years and to living up to their reputations.

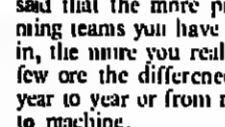
Chris Lancashire, managing director of Computer People North, explains the findings of the survey and points the way to using contract staff more efficiently.

Lancashire joined Computer People North in 1977, which is part of the VLI group. Prior to this he was in selling for Honeywell in the Manchester and Liverpool area with responsibilities for medium end large systems.



In his chosen lifestyle of frequently changing locations and colleagues, the contract programmer can be forgiven for occasionally adopting a somewhat worldly-wise demeanor, faced with project difficulties which he has seen in many different guises at other sites.

Indeed, it has often been said that the more programming teams you have worked in, the more you realise how few are the differences from year to year or from machine to machine.



Value

I believe that those contract staff, if carefully selected and well-managed, could contribute more to their client installations than they are currently expected to do. In fact, given a constructive relationship between client, contractor and agency...



Qualifies

Contract programmer as "age" is inevitably an increasing syndrome therefore and, provided his judgments are delivered with diplomacy and tact, this is perhaps no bad thing.

## NORTHERN CONTRACT OPPORTUNITIES

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- 370 CICS/DL1 Technical Designers
- 1500 BTL or CDE with DBM, Programmers
- 370 PL/1 CICS or ADABAS Programmers
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Computer People North

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(Ev. Wkld)

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**SHIFT SUPERVISORS**

Candidates should have a minimum of five years' experience on large IBM mainframes and at least two years as a shift leader. OS, MVS, JES2, CMS/VM background required.

**SENIOR OPERATORS**

Candidates should have large IBM mainframe experience operating under OS or MVS and be capable of progressing within the company. (For the above two positions there are also posts for applicants with slightly less experience.)

**SENIOR JOB CONTROLLER (TP)**

Candidates should have a sound knowledge of CICS/NCP/VTAM and be capable of progressing into network management. Good user-contact ability essential.

**SENIOR JOB CONTROLLER (Non TP)**

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As one of the Top Five UK Insurance Groups our clients can offer excellent benefits which include:

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- \* NON-CONTRIBUTORY PENSION AND GROUP LIFE ASSURANCE
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For further details of these outstanding opportunities, and to arrange a location interview, phone David Hides on 031-228 5868 or write, enclosing curriculum vitae, to DML Computer Personnel Services, 11 Charlotte Square, Edinburgh EH2 4DR. Please quote ref. CP/132/E.

(3048)

### UNIVERSITY OF ASTON IN BIRMINGHAM MICROPROCESSOR UNIT

#### RESEARCH ASSISTANT

Applications are invited for the post of Research Assistant in the Microprocessor Unit which supports undergraduate and postgraduate teaching within the University. The Unit also acts as a centre for project and research work and provides short courses for industry. The Unit is a registered consultancy under the Department of Industry MAPCON scheme.

The successful candidate will join an established team and will be expected to contribute to the maintenance of system software and the development of new systems. Opportunities will be available to advise research students, contribute to courses, and to participate in projects undertaken by the Unit. Applicants should therefore have a good honours degree or a higher degree, and be able to communicate with users from a wide variety of professional disciplines having varying levels of expertise in microprocessors.

The post will be for one year in the first instance. Salary will be on the University Scale 18 scale £4795-£8095 per annum.

Further information and application form may be obtained from Mr. A. O. Bello, Staffing Department, quoting reference 07/453/CN. The University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET Tel 021 359 3611 Ext 647 (3039)

### SWINSON COLLEGE DEPARTMENT OF SCIENCE & HUMANITIES

#### LECTURER GRADE II in COMPUTER STUDIES

Applicants should have an interest in Data Processing and a knowledge of COBOL. Experience in this field will be an advantage.

Courses in the Department include: REC/TEC Computer studies, A level Computing Science, short courses and solving work for Business Studies and Technology Departments.

The post is required from 1 January, 1981. Further details and application form may be obtained 14 days from the date of advertisement from the Principal, The College, Regent Circus, Swindon. (3038)

### NATIONAL INSTITUTE FOR RESEARCH IN QUANTUM

#### Computer Records Officer

A vacancy exists in the newly established Department for a person with experience in computer programming in data entry of the computer records office. The successful candidate will be responsible for the day-to-day running of the records office, including the preparation of reports, the maintenance of the records office, and the preparation of reports.

The successful candidate should have experience in computer programming, records office, and the preparation of reports.

Applicants should be graduates with a degree in Computer Science or a related subject. Applications should be sent to the Secretary, N.I.R.Q., 1025 SAT, (3038)

### HERIOT-WATT UNIVERSITY

Department of Computer Science

#### LECTURER

Applications are invited from suitably qualified graduates for the above post.

The Department offers a degree course in Computer Science, a first degree in Computer Science and Accounting, and an M.Sc. in Software Development and Analysis as well as research degrees.

The successful applicant should be able to contribute to teaching and research within the Department.

Salary Scale £5,500-£11,575 per annum (under review)

Application forms are available from the Staff Office, Chambers Street, Edinburgh EH1 1HX quoting Ref. No. 74/80. (3039)

## U-C-A

### Insure Your Future in Analysis

**£10,000**

A major insurance company is expanding its present on-line Honeywell installation and investigating brand-new financial management information systems. You could be a major contributor to their new plans. Excellent perks include annual bonus, free BUPA, free life insurance and 50p L.V.s per day. CW 41/1 Michael

### Senior Systems Analyst

**To £11,000**

Another major insurance company with two locations is anxious to recruit an analyst with mini or maxi computer experience. Their installation includes both IBM and two types of minicomputer to cut your teeth on. A multiplicity of new and enhanced commercial on-line systems needs your attention, so apply now. They work flexitime and have other perks including an annual bonus and non-CPS. CW 41/2 Michael

### Consultants

**£10,000 to £16,000**

Four large, well-established consultancies wish to recruit systems people with all-round experience on the latest equipment and the right personality to deal with clients who require first-rate service. Technical Communications Consultants are also required where in-depth implementation experience of IBM or DEC latest ranges are essential. Excellent fringe benefits and prospects. Age range 25 to 40 years. CW 41/3 Michael

### Lots of PL/1 Vacancies

**£5500 to £11000**

We have six MINI computer manufacturing companies with offices Leader with both small and large commercial companies. Locations are the CITY, BROMLEY, BRENTFORD, REDHILL, SLOUGH, SOUTHALL, COCKFOSTERS, WATFORD, BEDFORD, ESHER, CRAWLEY AND MID-KENT. Ring Colston CW 41/4

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1800	360	MDS	2450	SEDS.	3 MTHS. +
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1800	2803	COBOL	FRENCH-SPEAKING	FRANCE	3 MTHS.
1800	CICS	DL1/DOE	COBOL	NEW YORK	6 MTHS.

PLEASE PHONE IRENE FOR DETAILS

### Technical/Sales Support

**London and Home Counties To £9,000 + Car**

We have six MINI computer manufacturing companies with offices around the country who require people with the confidence to sell with clients in a pre- and post-sales situation. All vacancies require a programming background on minis and the jobs will provide an exciting and satisfying career. IBM or other mainframe experience is also an advantage. CW 41/5 Michael

### More RPG II People Wanted

**£6,500-£8,500 + Car**

London and Home Counties

If European travel and a car interest you, then several of our current list of 12 unique vacancies for RPG II Programmers and Analyst Programmers should appeal to you. Locations are the City, S. East London, Slough, Colchester, Crawley, N. Surrey and Brentford. Many of the firms have or will have the latest IBM 34 and 38 installations. CW 41/6 Colston

### Senior Operators

**£6,000 inc.**

South Coast

Here is an opportunity to live and work by the sea in a flourishing, well-known resort. The above company requires a senior operator (large IBM OS/VS1 experience) with at least two years' experience in a senior capacity. Good JCL experience is essential, and MVS an advantage. A three-shift system is worked. Perks include a relocation package, non-CPS and 4 weeks' hols. CW 41/7 Tricia

### Operators

**To £5,800**

City

A well-known insurance company requires computer operators with 1 yr. + experience on IBM 370 with DOS/POWER/CICS. They will shortly be updating to the new IBM range. There is a 3-shift system. Perks include subs. cant., 4 weeks' hols. and free BUPA. CW 41/8 Tricia

Contact: IRENE FOR CONTRACT DETAILS

## U-C-A Recruitment Consultants

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- ★ **CONTRACTS MANAGER — (USA Assignments)** ★

We are looking for people with sufficient DP experience, initiative and situation management skills to be responsible for the selection and administration of both permanent and contract staff.

Applicants should have good communication skills, maturity to accept full responsibility and the ability to work independently.

Both positions are located at our UK office and it is expected that some travel will be involved.

An appropriate salary will be offered to the successful applicants.

Applications will be treated in the strictest confidence and should be addressed to: —



**Alan King**  
(General Manager)  
**TANGENT COMPUTER SERVICES**  
102/106 South Street  
Romford, Essex RM1 1EX

Cambridge Consultants Limited is one of the UK's leading contract R & D organisations working for clients in fields such as computer software and hardware, electronics, printing systems, mechanical engineering, manufacturing technology and physics.

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We are looking for a Senior Software Engineer with project leadership experience or management potential to play a major part in the development of our Computer Software Group.

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A background of real-time programming on minis and microprocessors would be very useful, but primarily we need someone with several years experience in modern software methods and techniques, and who wishes to expand into commercial and managerial areas whilst still pursuing a highly technical career.

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The work will involve participation in the development of new business, contact with clients, preparation of proposals and quotations, and leading and working on projects often involving engineers from several disciplines. Projects may include, for example, microprocessor control of machine tools, vehicle navigation systems, satellite communications, image processing, or system software.

### SALARY TO £11K

Starting salary will be negotiable to £11,000 and we offer a range of additional benefits including profit share, share purchase scheme, and flexible working hours.

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### Cambridge Consultants

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**Janet Hales, Personnel Officer, Cambridge Consultants Limited,**  
Science Park, Milton Road, Cambridge CB4 4DW.  
Telephone 0223 358855

## NOTICE — Local and London Commuters —

### All Change to a New Line at CHELMSFORD

We are looking for two people to form the systems programming section of our clients new installation. This is to be a 2MB 4341, operating under OS/VS1 and using VM/CMS for on-line programming in PL/1. The company has a household name, and is a member of one of the leading U.K. groups.

#### CHIEF SYSTEMS PROGRAMMER

Experience must include systems programming, OS/VS1 and IBM Assembler. In addition VM and PL/1 would be advantageous.

#### SENIOR SYSTEMS PROGRAMMER

Experience of Sysgen and of working in an operating systems environment.

**CHIEF SYSTEMS PROGRAMMER**  
c. £9,000

**SENIOR SYSTEMS PROGRAMMER**  
c. £7,500

IBM 4341

OS/VS1

VM/CMS

**ASSEMBLER**

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If complete artwork is supplied 11 a.m. on a Tuesday  
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## MANAGEMENT & EXECUTIVE SELECTION

telephone  
01-637 9611

## SENIOR SYSTEMS PROGRAMMER London to £10K

Be involved in the beginning of an expanding data processing department.

This UK subsidiary of a multi-million dollar parent company has established a new International information systems function to provide advanced systems to serve the organisation in the 80s and beyond.

The successful candidate will have five years' software programming experience and it will include significant exposure to data communications, database and text handling facilities. The installation will use state of the art technology and appropriate orientation. Training will be given to candidates with suitable practical experience. Forward planning and communications skills are essential.

Salary to £10K plus BUPA, pension scheme, life assurance and four weeks' holiday.

In the first instance contact **Diane Oubridge** on 01-637 9611.

Suite 201/6 Albany House **MANAGEMENT & EXECUTIVE SELECTION**  
324 Regent Street London W1

## SALES

Why should you move if you are already a success?

... because we know you take great pride in performance, and we know that given the RIGHT opportunity you are ambitious enough to want to improve.

Our client is the rapidly growing division of a major multi-national corporation with a yearly turnover in excess of £500 million. The division has been in operation for eighteen months and is responsible for marketing and selling one of the most sophisticated mini-computers available. The product, developed in the United States, has been an outstanding international success, and its U.K. launch has been met by a massive demand. The equipment is ideal for both first time and existing computer users and has been developed to cope with all types of commercial business applications. These include Invoicing, Stock Control, Sales Ledger, Payroll etc. The machine also provides Word Processing and Data Communications facilities.

The first years trading has brought astonishing success and the division, operating from prestigious CENTRAL LONDON premises, now intends to increase its sales force in London and the Home Counties.

To be part of this success story you will already be successfully selling commercial computing systems. You will almost certainly be working for a computer manufacturer but have begun to feel cramped by the lack of career opportunity and inherent bureaucracy. You are seeking an alternative that will allow you to develop your entrepreneurial skills in a growth market, and within an organisation offering ground floor opportunities, high financial rewards, a visible route to the top and realistic and achievable sales targets.

On target earnings will be £16,000 but the real earning potential is in excess of £20,000. You will receive a basic salary of c£8,000 and be provided with a COMPANY CAR. Additional large company benefits include an attractive Pension Scheme, 4 weeks holiday and usual expenses.

If you think you have the character, presence and drive necessary, contact JOHN WYNTON at Modern to arrange immediate appointment for interview.

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Please send me your 'SALES' Information Package.

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Address \_\_\_\_\_

Position \_\_\_\_\_

Telephone \_\_\_\_\_

**SNR — PROG**

BUCKS c £8,500

Move into a company offering development, database, on-line and new hardware. The total package is too attractive to detail — but includes subsidised mortgage, annual bonus, modern offices etc.

(NW 1028)

**PROJECT LEADER**

HERTS c £12,000

A prominent life assurance company embarking on a new development project. The successful applicant will be involved in recruiting his/her systems/programming team. The company is rapidly expanding and offers an outstanding package including relocation. (WA 1083)

**ANALYST/PROG**

BIRMINGHAM c £8,000+ car

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(WA 1082)

**CONTRACTS IMMEDIATE STARTS**

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For your next assignment phone John Sharpe or send your C/V TODAY.

**PROJECT LEADER**

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This small installation is currently running on-line systems with database. Providing you have good systems experience our client will train where necessary. This position reports directly to the DPM and offers a very attractive employment package. (WA 1076)

**SYSTEMS MANAGER**

BERKS c £9,500

A small dept. within a friendly, lively company, currently expanding in many market fronts. If you have a programming background, pref. COBOL, are currently a Senior Systems Analyst and looking for your first move into management — this could be the right move for you. (NW 1074)

**PROJECT LEADER**

BUCKS c £10,000

Project leader or well qualified Senior Analyst looking for career advancement to manage team of 8 Analysts working mainly on financial systems. This company is going through an exciting expansion phase which includes new hardware. (NW 1033)

**ANALYST/PROG**

HERTS/ESSEX c £9,000

Our clients purchase of new IBM hardware has resulted in their D.P. department's next expansion phase. If you have a COBOL background and 4 yrs. plus experience you can move into the forefront of D.P. (NW 1027)

**PROJECT LEADER**

CITY to £10,000

Senior Systems Analyst with good all-round experience, pref. on mainframe, required to lead teams of 4/5. Financial applications experience is desirable and Database an asset. (TH 1042)

**TEAM LEADER**

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**SNR. SALES EXEC.**

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Our American clients require a Senior Sales Executive to increase their market penetration by selling their own software package which is already installed in over 1,400 worldwide sites including many prestigious U.K. clients. Grow with this expanding company and command high basic salary and a 2 litre car or allowance. (JS 1079)

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With an ever increasing use of firmware and digital techniques, the design of modern avionics has come to rely on the skills of the software engineer.

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Which is the reason that the computer system we use in our development programme is based on six GEC 4000 series machines, has both RJE and batch facilities and controls over fifty terminals. And why we have a comprehensive CAD facility.

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Such expertise will allow the man or woman we appoint to take charge of the day-to-day running of the system, control its staffing and implement the procedures governing its use.

It will also mean that this person will enjoy professional and financial rewards which, like our products, are quite outstanding.

For further details, please write to, or telephone Chris Hill, Marconi Avionics Limited, Elstree Way, Borehamwood, Herts. Telephone 01-953 2030 ext 3449. Alternatively telephone 01-207 3455 anytime. Please quote Reference No: MA 80/48. (3029)

**MARCONI AVIONICS**  
A GEC-Marconi Electronics Company

**UNIVERSITY OF STIRLING ADMINISTRATIVE DATA PROCESSING SECTION****ANALYST/PROGRAMMER**

A new post has been created within the Administration for a suitably experienced Analyst/Programmer. Candidates should have considerable programming experience in COBOL plus some involvement in Systems Analysis and Design. A good honours degree is desirable.

The section serves the data processing needs of the administration, e.g. well and student records, financial and management accounting (based on a DEC VAX 11/780).

Salary will be in accordance with the Other Related Scales 18 £4,950-£8,085 or 1A £5,505-£8,585 (both under review) commensurate with qualifications and experience.

Applications should be sent to the University Secretary, University of Stirling, Stirling FK9 4LA, together with the names of two referees by 31.10.80, in which whom further particulars are available. (Tel. Stirling 3171 ext. 2314). (3105)

**UNIVERSITY OF SALFORD COMPUTING LIBRARY****Senior Computing Officer/ Computing Officer**

A computer based special project for three years has been established to produce a software package for transferring job between units machines using the recently defined Job Transfer Protocol standard. Implementations will be produced for PRIME and ICL machines.

Experience with standard FORTRAN essential. Communications or general systems experience desirable.

Salary according to ability, age, and qualifications on the Other Related Scales 18 £4,950-£8,085 or 1A £5,505-£8,585 (both under review) commensurate with qualifications and experience.

Further particulars and application forms may be obtained from the Registrar, University of Salford, Salford M6 6PU, to whom completed application forms should be returned by 24th October, 1980, quoting reference number CU/80/OW. (3089)

**SENIOR PROGRAMMER**

Engineering Company in Brighton.

Real Time experience on DEC, RSX, or VMS operating systems preferred.

Expanding Computer Network serving 10 U.K. sites.

Challenging assignments with prospects.

Circa £8,000

Phone KEN LINE only on Brighton (0273) 40444

## THE SALES BIT

# Calculation of redundancy payments

LAST week I wrote about the definition of redundancy, the implications of being offered alternative employment and the implications of redundancy as a result of change of ownership.

This week I would like to discuss redundancy payments and how they are calculated, plus a few related points.

**Notice Period**

It is possible for an employee to leave his job voluntarily during the notice period without losing his rights to redundancy payment, provided he does so with the formal consent of the employer. There is also the right of appeal to the industrial tribunal if the employer's consent is unreasonably withheld.

If, however, an employee is dismissed for misconduct while under notice for redundancy, there is a right of appeal to the tribunal which may grant the redundancy in full, in part, or not at all, according to the circumstances involved.

Industrial disputes do not affect entitlement to payment, but the time spent on strike is not included in determining entitlement to redundancy payment.

**Payments**

The cost to the employer of making redundancy payments is not as great as the typical employee might believe. The Department of Employment is able to give the employer a rebate of 41% on any redundancy payment made if prior notice of redundancy is given via forms RPI and RP2.

The scale of compensation for redundancy payments varies according to age-group and operates as follows:

- 1/2 weeks' pay for each complete year of employment during which the employee was aged 41 to 64 inclusive for men and 41 to 39 inclusive for women.
- 1 week for each complete year of employment during which the employee was 22 to 40 inclusive.
- 1/2 week's pay for each complete year in which the employee was aged 18 to 21.

No compensation is payable for a fraction of a year within the age group concerned, but any excess may be added to the age-group below for accumulated reckoning.

The ceiling for the calculation of "one week's pay" is currently £120. Up to January, 1980, the amount was £110.

**Minimum**

There is, however, a minimum qualification period for redundancy payment of two years' continuous service which comes into effect only after an employee reaches the age of 18. (Happy days!)

There is also a maximum redundancy calculation period of 20 years, which means that the maximum redundancy

payment under the scheme is £3,600, ie 20x1/2 weeks. Anything beyond this must be at the discretion of the employer. (This, by the way, should not be confused with compensation for unfair dismissal, which I will deal with at a later date.)

Two final points on employee rights:

A redundancy payment cannot be claimed later than six months after the date of termination of employment, unless the matter has already been referred to an industrial tribunal, which in turn can allow a further six months for such a claim to be made.

Employees do not have to pay tax on redundancy payments which they receive in accordance with the Employment Protection Act.

**Shock**

I hope you find this information useful. It is rather heavy, but from one who has experienced the shock of suddenly finding himself on the dole, let me assure you that it is essential for every employee to know his and her rights in this respect.

Next week I shall be writing about dismissal as opposed to redundancy.

The reference source for all of the information contained in this series of articles on the Employment Protection Act is Cruser's Reference Book for Employers.

**TRADER****CONFERENCES****State of the Art Review**

Infotech's State of the Art Review '80 will be held in London from November 26-28. It is designed for senior data processing people and explores all areas of computing. Events include sessions on future systems, software life cycle and the information industry. Further information is available from Maureen Nicholas, Infotech, Nicholson House, Maldenhead, Berks. Tel: (0628) 39101.

The Viewdata Exhibition for Professional and Business People will be held at the West Centre Hotel, Lillie Road, London from October 29-31. The scope of the exhibition has been expanded to include more business personnel, and exhibits will include editing equipment, monitors and user terminals, peripherals, accessories, publications and semiconductor. AVIP will hold its conference during the show. It is organised by IPC Exhibitions, and further information can be obtained from IPC Exhibitions, 40 Watling Street, Lane, London EC1R 0NE. Tel: 01-837 3636.

The fifth International Conference on Pattern Recognition, sponsored by the IEEE Computer Society and the International Association on Pattern Recognition, will be held at the Konoer Hotel, Miami Beach, Florida, from December 1-4. For the preliminary program and registration information, write to Pattern Recognition Conference, Post Office Box 639, Silver Spring, Maryland 20901, US.

**Puzzle Answer**

THE key to a speed solution here is the fact that 1,000,000,000 equals 10<sup>9</sup>. So, since 10 equals 2x5, one thousand million must equal (2x5)<sup>9</sup> or 2<sup>9</sup>x5<sup>9</sup> or 512x1,562,500.

# SMR

## Sales & Marketing Recruiters Ltd

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A Sales and Marketing Services Company  
London & Midlands

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**PRODUCT:** A fully compatible range of advanced computers with a market potential that is yet to be fully exploited, designed, manufactured and marketed within the same organisation giving absolute control over product destiny.

**COMPANY:** An international group with over 1200 installations in the UK, selling to both new and established commercial and industrial users of all sizes.

**CAREER:** Real opportunities continually exist for career advancement; over half the present management team were previously salesmen with the company.

**COMPENSATION:** Sales targets are truly achievable. Last year several salesmen earned in excess of £30,000 and the majority of established salesmen earned over

## £20,000 + Company Car

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Please contact Jaki Whyte or Alan Williams quoting reference JTC/009.

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# The Lockheed glossary of DP terminology

<b>User Friendly (u.f.)</b> A good way to describe Lockheed's brand new, air-conditioned DP Centre in Riyadh, Saudi Arabia.	<b>Peripherals (u.all.)</b> Closely and functionally related to <i>backum</i> . Currently, peripherals include free bachelor accommodation, free food and laundry, free medical and life insurance.	<b>Address, real (u.)</b> The Senior Recruitment Exec (Lockheed), IAL, Personnel Consultancy, Aeradio House, Hayes Road, Southall, Middlesex. Quote numeric L294.
<b>Timeslice (u.all.)</b> A two-year assignment with Lockheed.	<b>Mainframe (u.)</b> IEC Series 3 System, updating now to IBM 4331.	<b>Conversational mode (u.)</b> An alternative to <i>address, real</i> . The mode may be entered by phoning 01-5745000.
<b>Checksum (u.)</b> A substantial configuration of digits payable monthly (with six monthly bonuses) during a <i>timeslice (u.f.)</i> .	<b>Downtime (u.)</b> Six downtime periods occur in every <i>timeslice</i> . During downtimes, Programmer/Analysts usually return to the UK, and receive free return flights.	
<b>Access (u.all.)</b> Strictly limited to experienced Programmer/Analysts.	<b>Suite (u.all.)</b> Usually applied to an Analyst/Programmer's bachelor accommodation (viz <i>peripherals</i> ).	
<b>Password (u.)</b> Typical passwords include COBOL, DOS/VIS, CICS and POWER. Access is dependent on programmer/analyst possessing the right passwords.		

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If complete artwork is supplied 11 a.m. on a Tuesday, Ring Roy Kelly for further details on 01-261 8016

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Our client is part of a large, very diverse group located in an attractive part of Surrey, close to the Hampshire Border. They operate a powerful medium range ICL2900 under DME2 which provides a service to companies within the group.

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For further details contact Jack Collings on 0273-833848 during the day or 0273-400880 any evening/weekend after 6.30 p.m. Local interviews can be arranged.

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We are a well established mainframe user at an advanced stage of developing a distributed systems network using mini computers. This development now requires the services of a Systems Programmer to develop and support the system software for the mini computer network. We feel that around 3/4 years software experience would be required but we are more concerned with quality of experience than quantity.

If you have a background in Operating Systems Support or low level language programming within a communications environment we would be interested to hear from you.

Our computer installation is situated to the West of Birmingham with easy access to the motorway network and City Centre.

A good salary and an excellent package of benefits enhances the genuine career opportunities available.

For an informal yet informative meeting contact our Advising Consultant, or 021-744 1862 (24 hour answering service) or 021-744 1862 (7-9 evenings and weekends)

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# JBA MIDLANDS

## Territory Manager - Sales

**West Midlands** Earnings c. £15,000 inc. car

Our client is one of the largest British owned computer manufacturers and an acknowledged leader in its field. Their product range and marketing record throughout the U.K., Europe and the Middle East is outstanding. They now require a further TERRITORY MANAGER for their West Midlands marketing branch.

Applicants should ideally possess successful d.p. sales experience but those able to demonstrate sales potential will be considered. Excellent training facilities are provided. Applicants currently resident in the West Midlands will be given preference.

This position offers genuine prospects in a solid, professional company.

Contact: Mike Galtzell

## Team Leader

**Nottingham** up to £7,500 + Benefits

An opportunity exists for a Team Leader to work on a number of challenging applications currently under development within the Research Department. The company is well known and respected and has an advanced computer installation comprising main frame and mini computers.

Applicants should have ideally 5 years programming experience and be proficient with FORTRAN, COBOL or Assembler languages in an IBM environment. Familiarity with mini computer applications development would be desirable but the ability to lead and motivate teams of programmers and analysts is essential.

Contact: Bev Stevens

## Team Leader - Programming

**Birmingham** £6,500 + car scheme + 2 Benefits

This mini computer systems company, a very effective subsidiary of a prominent and respected group, continues to operate successfully throughout the U.K. They now seek a PROGRAMMING TEAM LEADER for their Birmingham office.

Applicants should have 3 years COBOL experience on any hardware and must either have acted in a supervisory role or have developed sufficiently to be capable of assuming this responsibility.

Conditions of employment are impressive and the benefits considerably enhance the basic salary.

Contact: Mike Galtzell

## Systems Designer

**Gloucestershire** £8,000-£8,000

This computer services company of a large trading group with branches throughout the U.K. have a vacancy for a SYSTEMS DESIGNER. Applicants should possess sound ICL 1900 technical knowledge and ideally have designed and progressed a system through to implementation. This represents an ideal opportunity to develop experience of communications systems. Excellent discount scheme and benefits plus relocation assistance.

Contact: Mike Galtzell

## Programmers

**Kenilworth** c. £6,500

An organisation involved in the development of a new international project is seeking to recruit a number of programmers. The work will be challenging and will provide ample opportunity to develop technical skills in the on-line, communications and database fields.

Applicants should have at least 1 years IBM COBOL experience and have the desire to work on the development of applications in an IMS DB/1 environment.

Contact: Bev Stevens

## Gloucestershire

Our client, located in a very pleasant area, is a long established and respected division of a large and successful international Group. In order to develop systems to support the integrated administrative and distribution activities of several member companies they require:

### Systems Analyst

£6,700 Review 1 December

Applicants should ideally have 2 years experience of commercial systems but those having less experience, but relative to administrative or distribution applications will receive equal consideration. The successful person will possess management potential.

### Senior Programmer

£6,500 Review 1 December

Candidates should be educated to A level and possess 2 years COBOL programming experience preferably on ICL 1900 or 2900 equipment. Knowledge of PLAN and FORTRAN while being an advantage is not essential. These are excellent opportunities to work on interesting projects in a purposeful atmosphere. Relocation assistance and normal large company benefits apply.

Contact: Mike Galtzell

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